

MAY 01 1981

BELL TELEPHONE LABORATORIES, INCORPORATED

5-103

COMMON SYSTEMS
FOR USE WITH NO. 3 ESS
ARRANGED WITH 2-WIRE FEATURES
COMMON INITIAL PROGRAM LOADER
(CIPL)

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ISSUE 5
02/06/81

AT&TCO
SPCS

PR-1C953-50
103 PAGES

PRINTED IN U.S.A.



SECTION DICTIONARY

NUMBER	NAME	MAXIMUM	ORIGIN	TYP	ADDRESS-MODIFICATION
01	CIPL	0003561		C	
02	TEMP101	0000001		C	

COMMON INITIAL PROGRAM LOADER

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VERSION W77D OF SWAP; VERSION OF EPL

0:21:11 2/06/81 ****

CIPL W77D

0010000
0010000
0010000

```

01 DBNAM NO33E3I3.OFF.DATABASE
02 RELNAM NO3ESS
03 GETLIB LIBRARY, MEMBER=MOPTBL
04 GETLIB LIBRARY, MEMBER=SYSMAC
05 GETLIB LIBRARY, MEMBER=SYSSYM
06 GETLIB LIBRARY, MEMBER=PATCH2
07 FIRSTOPTSS
08 VERSION 3ACC, FIELD, ESS2E
09 PATCHINIT
10 NO33E3I3.OFF.OPMS(0) DECK
11 DSQUAL NO33E3I3
12 LISTING N, CRUNCH=Y, SYSOUT=N
13 #####
14 ##
15 ## UNIX ID = NO3PAG
16 ##
17 #####
18 #####
19 ###
20 #### pid date time rel
21 ###
22 #### cipl 1/24/81 17:48:21 7.1.1.1
23 ###
24 #####
25 #####
26 ###
27 #### pid date time rel
28 ###
29 #### cipl 1/24/81 17:48:21 7.1.1.1
30 ###
31 #####
32 NAME CIPL
33 OREF ON
34 GETLIB MEMBER=SPMAC
35 GETLIB MEMBER=TAPSYM
36 GETLIB MEMBER=GPMAC
37 GETLIB MEMBER=CCSYM
38 SYSPRINT MEMOINIT DELETE=NO, MEMO=NO
39 CIPL CSECT

```

0010000

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CIPL W77D

01 * ABSTRACT
02 *
03 * A BOOTSTRAP PROGRAM IS A METHOD USED TO GET A PROGRAM 'FOOT' INTO
05 * THE
07 * DOOR OF THE MEMORY. IN OTHER WORDS, WHEN A VOLITILE STORE LOSES
09 * ITS
11 * MEMORY DUE TO A SYSTEM OUTAGE OR PROGRAM BUG, AN I/O DEVICE
13 * CONTAINING
15 * A BACKUP COPY OF THE PROGRAM WILL BE READ IN USUALLY THROUGH A
17 * HARDWARE-
19 * SOFTWARE HANDSHAKING TO RELOAD MEMORY. BOOTSTRAP PROGRAMS ARE THE
21 * SOFTWARE
22 * END OF THIS RELOAD AND RANGE FROM AN ABSOLUTE RELOAD OF ALL
MEMORY
TO A SOPHISTICATED SELECTIVE PARTIAL RELOAD OF ONLY MUTILATED
MEMORY.
THE JACC COMMON SYSTEM BOOTSTRAP PROGRAM CAN BE USED AS A FULL OR
PARTIAL
MEMORY LOADER UTILIZING EITHER ONE OR TWO TAPE I/O DEVICES
CONTAINING
BOTH SYSTEM PROGRAMS AND SYSTEM PARAMETERS (TRANSLATION).
HEADER

COMMON INITIAL PROGRAM LOADER

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CIPL W77D

01 # ASSEMBLY PROLOGUE

02 * BOOTSTRAP OVERVIEW
03 *
04 * THE BOOTSTRAP PROGRAM IS A MICRO PROGRAM INITIATED LOADER WHICH HAS
05 * THREE MAJOR LOADING SEGMENTS. THE FIRST SEGMENT IS RESPONSIBLE FOR
06 * LOADING ANOTHER SEGMENT OF CODE INTO TRANSIENT CALL STORE FOR
07 * EXECUTION. IT WILL BE RESPONSIBLE FOR LOADING THE REMAINING CIPL
08 * SYSTEM LOADER AND ITS SUPPORTING PROGRAMS. THIS MORE COMPLEX LOADER
09 * (THIRD SEGMENT) IS RESPONSIBLE FOR SELECTIVE RE-LOADING OF THE 3ACC
10 * SYSTEM BY INTERACTION WITH THE 3ACC INITIALIZATION PROGRAMS. THE
11 * CRITERIA FOR RE-LOAD IS THE VERIFICATION OF 4K MEMORY MODULES BY THE
12 * USE OF A CHECKSUM ALGORITHM AND DATA LOADED OFF OF TAPE DURING THE
13 * SECOND STAGE OF BOOTSTRAP.
14 *
15 *
16 * THE END RESULT OF BOOTSTRAPING IS THE GUARANTEED OVERWRITE OF BAD PROGRAM
17 * MEMORY WITH VERIFIED GOOD PROGRAM OFF OF TAPE. THE BOOTSTRAP PROGRAM
18 * REQUIRES NO MAIN MEMORY SINCE IT IS LOADED IN TEMPORARY MEMORY AND
19 * CLEARED OUT AS PART OF THE SYSTEM INITIALIZATION.
20 *
21 *

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CIPL

W77D

01 # STATUS REGISTER
 02 TAPSTAT LAYOUT 1, FLTBLK
 03 DEVCODE ITEM 6
 04 WENBL ITEM 1
 05 TUR ITEM 1
 06 EOT ITEM 1
 07 TOR ITEM 1
 08 TIM ITEM 1
 09 DDT ITEM 1
 10 MTCE ITEM 1
 11 REWND ITEM 1
 12 BOT ITEM 1
 13 MOP ITEM 1
 14 LOEND

TAPSTAT
 001 MOP BOT REWND MTCE DDT TIM TOR EOT TUR WENBL DEVCODE
 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

24 R9 LAYOUT 1 # FLAGS FOR HASHSUM CALC.
 25 DOALL ITEM 1 # FORCE ALL MEMORY TO RELOAD
 26 PASS ITEM 1 # GENERIC/TRNSLN PASS
 27 BAD4K ITEM 1 # RELOAD OF AT LEAST ONE 4K REQUIRED
 28 NOTEST ITEM 1 # DO NOT TEST FOR RELOAD
 29 LOEND

R9
 001 -003- 30 #

 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

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CIPL W77D

01 BUFSTAT LAYOUT 1,FLTBLK
 02 ITEM 6 # DEVICE CODE
 03 PPE ITEM 1
 04 BR ITEM 1
 05 RDY ITEM 1
 06 INTOFF ITEM 1
 07 LODST ITEM 1
 08 UNST ITEM 1
 09 STUFF ITEM 1
 10 ACTIV ITEM 1
 11 BOFL ITEM 1
 12 FILL ITEM 1
 13 LOEND

BUFSTAT -003- 14 #
 00 FILL BOFL ACTIV STUFF UNST LODST INTOFF RDY BR PPE DEVICE CODE
 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

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01 LAYOUT 7,FLTBLK
02 STATE ITEM 5 # SCHEDULER STATE
03 LOSKIP 0,0
04 PTPOS ITEM 11 # TAPE POSITION
05 RECOV ITEM 1 # ERROR RECOVERY IP
06 TR ITEM 2 # READ TRACK
07 INTREQ ITEM 1 # INTERRUPT REQUESTED.
08 INTHNR ITEM 1 # INT. REQUEST HONORED.
09 EA ITEM 16 # TAPE ENABLE ADDRESS
10 BUFC ITEM 4
11 CARYBIT ITEM 1 # PATCH CROSSES BLOCK BOUNDRY
12 PTPKNOWN ITEM 1 # TAPE POSITION KNOWN FLAG
-002- 13 ##### PTPKNOWN WILL APPEAR AS PTPKNOW IN PICTURES
14 STUS ITEM 1 # ACTIVE OR DONE FLAG
15 TU00S ITEM 1 # BSCHED TU 00S
16 TIMING ITEM 1 # TIMING FLAG
17 BSBOT ITEM 1
18 STORNOT ITEM 1 #NO STORAGE OF BLOCK BIT
19 SPECSTOR ITEM 1 # SPEC. UNLOAD REQUIRED.
-002- 20 ##### SPECSTOR WILL APPEAR AS SPECSTO IN PICTURES
21 VERT ITEM 2 # VERIFY TRACK NUMBER.
22 SCHCON1 ITEM 1 # SCHEDULER CONTROL BIT
23 SCHCON2 ITEM 1 # SCHEDULER CONTROL BIT
24 DESTON ITEM 11 # TAPE DESTINATION
25 ACTSEQ ITEM 1 #ACTIVATE SEQ. ERROR CHECK
26 ERNO ITEM 1 #ERROR RECOVERY NOT ALLOWED
27 CONRCV ITEM 1 # CONTINUOUS READ RECOVERY.
28 EOPF ITEM 1 #END OF PATCH FILE SEEN.
29 TIMKON ITEM 16 # TIMING CONSTANTS
30 EASV ITEM 16 # SAVED EA FOR RECOVERY
31 LOEND
-003- 32 #

```

00																STATE		
01	INTHNR	INTREQ	TR	RECOV											PTPOS	SCHEDULER STATE		
02																TAPE POSITION		
03	SCHCON2	SCHCON1	VERT	SPECSTO	STORNOT	BSBOT	TIMING	TU00S	STUS	PTPKNOW	CARYBIT						BUFC	
04	EOPF		CONRCV	ERNO	ACTSER											DESTON		
05																TAPE DESTINATION		
06																TIMING CONSTANTS		
																EASV		
																SAVED EA FOR RECOVERY		
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0		

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CIPL W77D

01	CHKSUM LAYOUT	7,FLTBLK	# LAYOUT OF HEADER + A TWO WORD ENTRY
02	ITEM	15	#BASE ADDRESS OF PROGRAM ON TAPE
03	WOPEN ITEM	1	#CHECKSUM INFO. CHANGING. (XLATE BEING WRITTEN)
05	ITEM	16	#BASE ADDRESS OF TRANSLATION ON TAPE
06	ITEM	16	#NUMBER OF 4K BLOCKS OF TRANSLATION DATA ON TRACK 1
08	ITEM	16	#BASE ADDRESS OF PATCH FILE ON TAPE
09	PROGBLKS ITEM	16	# NUMBER OF GENERIC RELATED CHECKSUMS.
10	HASHLEN ITEM	13	# LENGTH FOR HASHSUM CALC.
11	ITEM	1	# SPARE BIT
12	FORCOPY ITEM	1	# BIT SET TO FORCE COPY OF BLOCK
13	TSFLG ITEM	1	# TEMPORARY STORE FLAG, 4K BLOCK IS NOT WRITE PROTECTED
15	ITEM	16	# HASHSUM VALUE
16	LOEND		

CHKSUM	-003-	17	#
00	WOPEN		
01			BASE ADDRESS OF PROGRAM ON TAPE
02			BASE ADDRESS OF TRANSLATION ON TAPE
03			NUMBER OF 4K BLOCKS OF TRANSLATION DATA ON TRACK 1
04			BASE ADDRESS OF PATCH FILE ON TAPE
05	TSFLG	FORCOPY	PROGBLKS
06			NUMBER OF GENERIC RELATED CHECKSUMS.
			HASHLEN
			LENGTH FOR HASHSUM CALC.
			HASHSUM VALUE
	15	14	13 12 11 10 9 8 7 6 5 4 3 2 1 0

0010000	44	BLKSIZ EQU	4096	
0000207	45	DDELETE NOTE	1	
0006453	46	TTY BEL EQU	0(207)	
	47	OFLBOOTCON EQU	B(110100101011)	# OFFLINE BOOTSTRAP CONSTANT

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CIPL W77D

```

01          LAYOUT 24
02 HDRSIZE ITEM 16
03          ITEM 16
04          ITEM 16
05          ITEM 16
06          ITEM 16
07          ITEM 16
08          ITEM 16
09          ITEM 16
10          ITEM 16
11          ITEM 16
12          ITEM 16
13          ITEM 16
14 PATLENGTH ITEM 16
15 OWN0 ITEM 16
16          ITEM 16
17          ITEM 16
18          ITEM 16
19 OWSTAT ITEM 2
20          LOSKIP
21 WRDLENGTH ITEM 16
22 HADR ITEM 4
23 SEGNO ITEM 12
24 LADR ITEM 16
25 NEWD ITEM 16
26 OLDH ITEM 8
27 NEWDH ITEM 8
28 OLD ITEM 16
29          LOEND

```

LENGTH OF HEADER.

NEXT 4 WORDS=GENERIC IDENTIFIER.

NEXT 4 WORDS=ISSUE IDENTIFIER.

TOTAL LENGTH OF PATCH FILE.

OVERWRITE NUMBER.

NEXT 3 WORDS=TIME OF PATCH.

OVERWRITE STATUS

LENGTH OF SPECIFIC PATCH

HIGH BITS OF PATCH ADDRESS.

SEGMENT NUMBER

PATCH ADDRESS

LOW 16 BITS OF NEW DATA.

HIGH 8 BITS OF OLD DATA.

HIGH 8 BITS OF NEW DATA.

LOW 16 BITS OF OLD DATA.

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D02

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CIPL W77D

00	-003- 01 #	HDRSIZE	
01		LENGTH OF HEADER.	
02			
03		NEXT 4 WORDS=GENERIC IDENTIFIER.	
04			
05			
06			
07		NEXT 4 WORDS=ISSUE IDENTIFIER.	
08			
09			
10			
11			
12		PATLENGTH	
13		TOTAL LENGTH OF PATCH FILE.	
14		OWNO	
15		OVERWRITE NUMBER.	
16		NEXT 3 WORDS=TIME OF PATCH.	
17			OWSTAT
18		WRDLENGTH	
19		LENGTH OF SPECIFIC PATCH	
20	SEGNO		HADR
21	SEGMENT NUMBER		HIGH BITS OF PATCH ADDRESS.
22		LADR	
23		PATCH ADDRESS	
		NEWD	
		LOW 16 BITS OF NEW DATA.	
	NEWDH		OLDH
	HIGH 8 BITS OF NEW DATA.		HIGH 8 BITS OF OLD DATA.
		OLD	
		LOW 16 BITS OF OLD DATA.	

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15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
CIPL W77D

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CIPL W77D

01 BLMMA EXTERN PTRESET

04 LAYOUT EXTERN HGAREA

05 LAYOUT EXTERN I_OBUF

08 MASACS EXTERN APPTL

09 MASACS EXTERN BLKSIZE

10 MASACS EXTERN BLK4K

11 MASACS EXTERN BUFBLK

12 MASACS EXTERN BUFLN

13 MASACS EXTERN FSTDIST

14 MASACS EXTERN HASHSUM

15 MASACS EXTERN LASTBUF

16 MASACS EXTERN MSECPR

17 MASACS EXTERN NOTESTCK

18 MASACS EXTERN OBUFLN

19 MASACS EXTERN REDKON

20 MASACS EXTERN UNPKWRDS

21 MASACS EXTERN BLKPERCK

24 CBLM EXTERN RESETPT

25 CBLM EXTERN SSPAB1

26 CBLM EXTERN SSPIOADR

29 CTSD EXTERN INITTST1

30 CTSD EXTERN INITTST2

31 CTSD EXTERN SYSTM

32 CTSD EXTERN POSTMORT

35 CINIT EXTERN BOOTRTN

36 CINIT EXTERN RLDXLATE

37 CINIT EXTERN PMISC

38 CINIT EXTERN INITBOOT

39 CINIT EXTERN INITTSTC

40 CINIT EXTERN LDDB15_0

41 CINIT EXTERN OFL_HG

44 CSYSUB EXTERN TIMCHK

45 CSYSUB EXTERN TIMOUT

46 CSYSUB EXTERN TIMOUTX

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CIPL

W77D

01	PUBLIC	ALLMAS
02	PUBLIC	APPTRLR
03	PUBLIC	BTLODOFS
04	PUBLIC	BOOTLOAD
05	PUBLIC	BUFC
06	PUBLIC	CHKSUM
07	PUBLIC	CSCHEDUL
08	PUBLIC	DESTON
09	PUBLIC	DONOTSTR
10	PUBLIC	HASHLEN
11	PUBLIC	SSPSV
12	PUBLIC	STATE
13	PUBLIC	TR
14	PUBLIC	TSFLG
15	PUBLIC	OFLBTOFS
16	PUBLIC	PROGBLKS
17	PUBLIC	STREAD1
18	PUBLIC	SYSTM0FS
19	PUBLIC	TIMKON
20	PUBLIC	TIMING
21	PUBLIC	UNLSPEC

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CIPL W77D

0000000	01	SCRATCH EQU	R0
0000002	02	BUFFCNT EQU	R2
0000003	03	WORDCNT EQU	R3
0000004	04	BLOCKCNT EQU	R4
0000005	05	PGMCNT EQU	R5
0000006	06	TRIGREG EQU	R6
0000007	07	CONSEC EQU	R7
0000012	08	ORDEREG EQU	R10
0000013	09	STATUSR EQU	R11

13 * INITIAL BOOTSTRAP PHASE (LOADING OF FIRST SEGMENT)
 14 *
 15 * THE MOMENT AN INITIALIZATION IS EXECUTED BY THE 3ACC AND THE MICRO
 16 * CODE, THROUGH INTERROGATION OF THE ISC BITS, DETERMINES THAT THE
 17 * SOFTWARE MAY BE MUTILATED, A REWIND IS GIVEN TO THE TAPE UNIT TIED
 18 * NUMERICALLY TO THE 3ACC IN TROUBLE. AT THE TIME THE TAPE IS SENSED
 19 * TO HAVE STOPPED AT THE BEGINNING OF TAPE, THE MICRO-CODE STARTS THE
 20 * TAPE TO READ. THE MICRO-CODE UNLOADS THE FIRST 128 WORDS THAT
 21 * COME OFF THE TAPE AND STORES THEM AT LOCATION ONE ON TO THIRTY-THREE.
 22 * UPON COMPLETION OF THIS TASK, THE MICRO-PROGRAM TRANSFERS TO LOCATION
 23 * EIGHT AND THE FIRST SEGMENT OF CODE BEGINS TO EXECUTE.
 24 *
 25 *
 26 * THE FIRST SEGMENT OF THE BOOTSTRAP SEQUENCE IS 122
 27 * EXECUTABLE WORDS LONG. THESE 122 WORDS MUST BE CAPABLE OF
 28 * CONTINUING THE UNLOADING OF PROGRAM UNTIL AT LEAST THE REMAINDER
 29 * OF THE BOOTSTRAP PROGRAM IS LOADED INTO MEMORY. THIS FIRST SEGMENT
 30 * IS CAPABLE OF SOME ERROR RECOVERY. SINCE THE BOOTSTRAP FILE IS
 31 * DUPLICATED ON BOTH TRACKS 1 AND 2, ANY CRC ERROR ENCOUNTERED BY
 32 * THE 1ST AND 2ND SEGMENT OF THE BOOT PROGRAM WILL STOP THE READ,
 33 * # ISSUE A BACKSPACE AND THEN RE-START THE READ ON THE
 34 * OTHER TRACK.
 35 *
 36 *
 37 * THE SAME KIND OF RECOVERY WILL BE EXECUTED BY THE MICRO-CODE IF
 38 * IT IS UNABLE TO READ THE FIRST 128 WORDS OF THE FIRST BLOCK.

0010000		42	BOOTSTP	
	00 0777774	43	OFFSET EQU	--4
0010000		44	BOOTSTP	
0010000		45	# THIS CODE MUST BE AT LOCATION 4 SINCE ITS ACCESS IS VIA BSAI 2.	
0010000 01 000000 123440 -----		46	BEGIN	()
0010001		47	SMIO	# SEND COMMAND. 1
0010001 01 000001 123500 -----		48	BOTST	
		49	TIO	# 2

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CIPL W77D

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0010002 01 000002 055777 ----- 0010001      01      BNC      BOTST      # 3
0010003 01 000003 056400 ----- -001- 02      RETURN      # 4
0010003 01 000003 056400 ----- -001- 03      BTSA

```



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0010004      07 START
0010004 01 000004 103020 -----      08 # THIS IS THE ADDRESS TRANSFERED TO BY THE MICRO CODE.
0010005 01 000005 003401 042160 CINIT      09      ZR      R1      # PROGRESS REGISTER FOR BOOT PROGRAM. 5
0010007      10      LI      R0,HGAREA+OFL_HG      # 7
0010007 01 000007 013000 -----      11      MIMODE      L HG,R0      # INITIALIZE HOLD-GET. 9
0010010 01 000010 032523 035000      -001- 12      MIS      0
0010011 01 000011 035000 010174 0010174      -002- 13      VFD      8,HGXT 8,ROXF
0010013 01 000013 003073 ----- MASACS      14      STAL      R0,REMAINBOOT-1,RAO      # SET UP ADR. TO STORE REMAINIG BOOT. 11
0010014      15      LN      R3,BUFBLK-2      # REMAINING BUFFERS IN 1ST BLOCK. 12
0010014      16 ZRPT
0010014 01 000014 113000 -----      17      MIMODE      ZPT      # PREVENT TIMEOUT 1.5 SEC. TIMEOUT. 14
0010015 01 000015 134350 -----      -001- 18      MIS      0
0010016 01 000016 036060 000107      -002- 19      DATA      ZPTX
0010020 01 000020 003641 002015      20      BX      R3,MRBUFRS-OFFSET      # TEST IF BLOCK IS COMPLETE. 16
0010022 01 000022 023440 -----      21      LI      R10,TSTAT      # PREPARE TO SEND STATUS TO CHECK CRC. 18
0010023 01 000023 071420 -----      22      SMIO      # 19
0010024 01 000024 023500 -----      23      HA      # TIME FOR RESPONSE. 20
0010025 01 000025 055104 ----- 0010131      24      TIO      # 21
0010026 01 000026 024020 -----      25      BNC      CRCMESS      # CRC ERROR. 22
0010027 01 000027 054005 ----- 0010034      26      TBN      R1,0      # IS MICRO-LOADED BLOCK IN? 23
0010030 01 000030 030440 000001      27      BC      YESIN      # 24
0010032 01 000032 026020 -----      28      LL      R2,1      # GET BLK HEADER LEFT BY MICRO CODE. 26
0010033 01 000033 053040 ----- 0010073.      29      SBN      R1,0      # SET 1ST BLOCK IN FLAG. 27
0010033      30      B      ZROER      # RESET ERROR FLAG AND CONTINUE. 28

```



```

0010034      32 YESIN
0010034 01 000034 116402 003777      33      LRM      R0,R2,M(BLKADR)      # SETUP FOR SEQUENTIAL BLOCK READ CHECK. 30
0010036 01 000036 031040 045266 LAYOUT      34      LAL      R2,I OBUF,RAO      # RECOVER BLK # AND SET UP ADR REG. 32
0010040 01 000040 003442 003777      35      NI      R2,M(BLKADR)      # ISOLATE BLK # FOR CHECK. 34
0010042 01 000042 004401 -----      36      AN      R0,1      # ADJUST FOR NEXT BLK. 35
0010043 01 000043 005002 -----      37      SR      R0,R2      # 36
0010044 01 000044 055000 ----- 0010044      38      BNC      *      # BLOCK RECOVERED IS GREATER THAN FAILING
0010045 01 000045 040040 -----      40      L      R2,0(RAO)      # BLOCK 37
0010046 01 000046 003521 001475 MASACS      41      LI      R5,BLKSIZE-3      # RESTORE TRACK AND EOF DESIGNATIONS. 38
0010050      42 NEWLA      # PREPARE BUFFER LENGTH. 40
0010050 01 000050 140341 -----      43      L      R14,1(RAO)      # RECOVER LENGTH AND 4 ADR. BITS. 41
0010051 01 000051 041362 -----      44      LA      R15,2(RAO)      # RECOVER LOW 16 ADR BITS. 42
0010052 01 000052 016556 177760      45      LRM      R6,R14,MSK(12,4)      # SET UP PROG. LENGTH. 44
0010054 01 000054 010544 -----      46      RRN      R6,4      # 45
0010055 01 000055 004136 -----      47      SN      R5,2      # ADJUST WRD/BLK COUNT FOR ABOVE. 46
0010056 01 000056 055015 ----- 0010073      48      BNC      ZROER      # 47
0010057      49      SNL      RA1,1      # ADJUST DESTINATION ADR. FOR RELOAD. 50

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0010057 01 000057 004377 ----- -001- 01 SN RA1+1,1
0010060 01 000060 054002 ----- 0010062 -001- 02 BC IFS270
0010061 01 000061 004357 ----- -001- 03 SN RA1,1
0010062 01 000062 136140 000073 04 DATACHK
0010064 01 000064 014125 ----- 05 BX R6,DATAVL-OFFSET # IF DATA AVAILABLE STORE IT. 52
0010065 01 000065 054006 ----- 06 TZ R5 # CHECK IF BUFFER IS EXHAUSTED? 53
0010066 01 000066 053762 ----- 0010073 07 BC ZROER # GO TO MAIN LINE CODE FOR MORE BLOCKS. 54
0010050 08 B NEWLA # CONTINUE THROUGH BLOCK. 55

0010067 10 DATAVL
0010067 01 000067 141001 ----- 11 LA R0,1(RA0) # GET PROG. WRD. 56
0010070 01 000070 045401 ----- 12 STA R0,1(RA1) # STORE PROG. WRD. 57
0010071 01 000071 036120 000066 13 BX R5,DATACHK-OFFSET # CONT. PROG. RELOAD IF BUF. NOT EXHAUSTED. 59

0010073 16 ZROER
0010073 01 000073 122037 ----- 17 ZBN R1,15 # CLEAR ERROR RECOVERY IF BIT. 60
0010074 01 000074 024055 ----- 18 TBN R2,S(E0F) # IS THIS AN EOF BLOCK. 61
0010074 19 CIPL OW 0(75) # 11428
-001- 20 NOTE ***** THE FIRST ADDRESS OVERWRITTEN IS 000075 *****

0010075 01 000075 050000 010213 0010213 23 BCL MOREBOT # CONTINUE RELOAD OF SPECIAL PROGRAMS 63

0010077 27 SETNEWUP
0010077 01 000077 103075 ----- 28 LN R3,BUFBLK # SET UP BUFFERS PER BLK. 64
0010100 01 000100 035000 045265 MASACS 29 STAL R0,I_OBUF-1,RA0 # PREPARE ADR. FOR IO BUFFER. 66
0010102 01 000102 053712 ----- 0010014. 30 B ZRPT # CONTINUE BLK UNLOADING. 67
0010103 31 MRBUFRS
0010103 01 000103 103253 ----- 32 LN R10,BSTAT # ASSUME COMMAND FOR BUFFER STAT IS 11. 68
0010104 33 RESND
0010104 01 000104 173002 ----- 34 BSAI 2 # 69
0010105 01 000105 024267 ----- 35 TBN R11,S(BR) # IS BR SET? 70
0010106 01 000106 055776 ----- 0010104 36 BNC RESND # 71
0010107 01 000107 003641 044013 37 LI R10,BSUNLON # BR IS SET. SET UP UNLOAD STATE. 73
0010111 01 000111 073002 ----- 38 BSAI 2 # 74
0010112 01 000112 003641 120013 39 LI R10,BCLROCN # CLEAR THE OFF-LINE COUNTER. 76
0010114 01 000114 073002 ----- 40 BSAI 2 # 77
0010115 01 000115 003501 000077 41 LI R4,WRDBUF-1 # SET UP WRDS/BUF COUNT. 79
0010117 01 000117 003641 100007 42 LI R10,SD # PREPARE BUFFER UNLOAD COMMAND. 81
0010121 43 WRDMORE
0010121 01 000121 173002 ----- 44 BSAI 2 # 82
0010122 01 000122 045261 ----- 45 STA R11,1(RA0) # STORE INCOMING DATA AWAY. 83
0010123 01 000123 036100 000125 46 BX R4,WRDMORE-OFFSET # CHECK IF MORE WORDS ARE IN BUFFER. 85
0010125 01 000125 003641 020013 47 LI R10,BCLRBRF # PREPARE TO CLEAR BR. 87
0010127 01 000127 073002 ----- 48 BSAI 2 # 88
0010130 01 000130 053664 ----- 0010014 49 B ZRPT # 89

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CIPL

W77D

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0010131
0010131 01 000131 124020 -----
0010132 01 000132 155000 ----- 0010132
0010133 01 000133 024037 -----
0010134 01 000134 154000 ----- 0010134
0010135 01 000135 026037 -----
0010136 01 000136 003641 040007
0010140 01 000140 023440 -----

0010141 01 000141 026077 -----

0010142
0010142 01 000142 136060 000146
0010144 01 000144 003641 006415
0010146 01 000146 024053 -----
0010147 01 000147 054002 ----- 0010151
0010150 01 000150 026254 -----
0010151
W0010151 01 000151 173002 -----
0010152 01 000152 003641 010007
0010154
W0010154 01 000154 173002 -----
0010155 01 000155 017670 007400
0010157 01 000157 055775 ----- 0010154
0010160 01 000160 026077 -----

0010161
0010161 01 000161 136060 000165
0010163 01 000163 003641 007415
0010165 01 000165 024053 -----
0010166 01 000166 054002 ----- 0010170
0010167 01 000167 026254 -----
0010170
W0010170 01 000170 173002 -----
0010171 01 000171 053706 ----- 0010077
0010172 01 000172 000000 -----
0010173 01 000173 000000 -----

0010174 01 000174 000000 -----

04 # ERROR RECOVERY FOR INITIAL BOOT LOADER.
05 CRCMESS
06 TBN R1,0 # IS THIS MICRO-BLOCK. 90
07 BNC * # ERROR IS SOFTWARE UNRECOVERABLE. 91
08 TBN R1,15 # CHECK IF RECOVERY WAS ALREADY IP. 92
09 BC * # YES KILL BOOT 93
10 SBN R1,15 # SET RECOVERY BIT. 94
11 LI R10,INIT # 96
12 SMIO # SEND INIT ORDER TO STOP AND INITIALIZE
# TDC. 97
14 SBN R3,15 # TIMEOUT CONSTANT FOR APROX. 70MSEC. (R3
# MUST BE 0) 98

16 STPT
17 BX R3,STPT-OFFSET # WAIT 70MSEC BEFORE NEXT ORDER. 100
18 LI R10,TBS # SET UP BACKSPACE ORDER. 102
19 TBN R2,S(TRCK) # CHECK WHICH TRCK WAS READ. 103
20 BC NOONE # 104
21 SBN R10,S(TR) # SET TRK TO ONE SINCE ERROR ON ZERO. 105
22 NOONE
23 BSAI 2 # 106
24 LI R10,SST # 108
25 RESTAT
26 BSAI 2 # 109
27 CIRM R11,0,8,MSK(4) # 111
28 BNC RESTAT # 112
29 SBN R3,15 # TIME FOR APROX 70 MSEC. R3 MUST BE ZERO.
# 113

31 SVNTY
32 BX R3,SVNTY-OFFSET # 115
33 LI R10,TRT # 117
34 TBN R2,S(TRCK) # 118
35 BC NONE # 119
36 SBN R10,S(TR) # 120
37 NONE
38 BSAI 2 # 121
39 B SETNEWUP # 122
40 VFD 0 # 2 SPARE WORDS.
41 VFD 0
42 # THIS IS AN ADJUSTMENT WORD NEEDED FOR BLOCKS BIGGER THAN 128
43 VFD 0

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0010175          01 REMAINBOOT          # REMAINING BOOTSTRAP CODE

0010175          0000175          05 OFLBTOFS EQU  **CIPL          # OFFSET INTO I_OBUF TO OFLBOOTTBLE
0010175          06 OFLBOOTTBLE          # OFFLINE BOOTSTRAP TABLE
0010175          07 # THIS TABLE IS USED BY THE 'LODOMAS' ROUTINE IN CNRUTL TO PERFORM
0010175          08 # THE OFFLINE BOOTSTRAP OPERATION. THE TABLE MUST FOLLOW IMMEDIATELY
0010175          09 # AFTER THE INITIAL BOOTSTRAP SEGMENT ABOVE.
0010175          10
0010175          11 # THE FORMAT OF THE TABLE IS AS FOLLOWS: THE FIRST WORD CONTAINS
0010175          12 # THE TOTAL NUMBER OF TABLE ENTRIES. THREE WORD ENTRIES
0010175          13 # FOLLOW - TWO FOR A 20-BIT ADDRESS AND ONE FOR DATA. THE FIRST
0010175          14 # ENTRY MUST BE 'OFLBOOTSW'.
0010175          16 # THE FOLLOWING ENTRIES MUST NOT BE SEPARATED *****
0010175 01 000175 000003 000000          17 DATA (OFLBOOTTBLE-OFLBOOTTBLE-1)/3
0010176 01 000176 000000 013476 0013476 18 ADDR OFLBOOTSW
0010200 01 000200 006453 -----          19 DATA OFLBOOTCON
0010201 01 000201 000000 043000 CTSD          20 ADDR INITTST1          # MUST BE FIRST ENRTRY
0010203 01 000203 121334 ----- CINIT          21 DATA INITTSTC
0010203 01 000203 121334 ----- CINIT          22 CIPL OW 0(204)          # 13299
-001- 23 NOTE ***** THE FIRST ADDRESS OVERWRITTEN IS 000204 *****

0010204 01 000204 000000 043350 CTSD          26 ADDR INITTST2
0010206          27 EOW          # 13299
-001- 28 NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 000205 *****
*

0010206 01 000206 121334 000000 CINIT          32 DATA INITTSTC
0010206 01 000206 121334 000000 CINIT          33 CIPL OW 0(207)          # 13299
-001- 34 NOTE ***** THE FIRST ADDRESS OVERWRITTEN IS 000207 *****

0010207          37 OFLBOOTTBLE
0010207          38 # THE FOLLOWING ENTRIES MUST FOLLOW IMMEDIATELY AFTER OFLBOOTTBLE ***
0010207 01 000207 000000 010502 0010502 39 BTLODOFS EQU  **CIPL          # OFFSET INTO I_OBUF TO 'BOOTLOAD' ADDR
0010211          40 ADDR BOOTLOAD
0010211          41 EOW          # 13299
-001- 42 NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 000210 *****
*

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CIPL W77D

0000211
0010211 01 000211 000000 043461 CTSD

01 SYSTM0FS EQU **CIPL # OFFSET INTO I_OBUF TO 'SYSTM' ADDR
02 ADDR SYSTM # ADDRESS OF SYSTM
03 # THE ABOVE ENTRIES MUST NOT BE SEPARATED *****

0010213

0010213 01 000213 120420 -----
0010214 01 000214 056000 -----
0010215 01 000215 153000 ----- 0010215
0010216 01 000216 153003 ----- 0010221
0010217 01 000217 153255 ----- 0010474
0010220 01 000220 153170 ----- 0010410

07 MOREBOT

08 # REMAINING CODE WILL LOAD SPECIAL CORE PROGRAMS AND CHECKSUM FILE.

09 FLZ R1,R0
10 BPAX R0
11 B * # NOT USED
12 B KEEPDR # UNLOAD SPECIAL PROGRAMS.
13 B READCKSUM #SWITCH TRACKS AND READ CHECKSUMS.
14 B PHASE3 # STOP UNIT, GO TO INIT.

0010221
0010221 01 000221 131000 045265 LAYOUT
0010223 01 000223 003075 ----- MASACS
0010224
0010224 01 000224 113000 -----
0010225 01 000225 134350 036060
0010226 01 000226 036060 010313 0010313
0010230 01 000230 003641 002015
0010232 01 000232 023440 -----
0010233 01 000233 071420 -----
0010234 01 000234 023500 -----
0010235 01 000235 055111 ----- 0010346
0010236 01 000236 016402 003777
0010240 01 000240 031040 045266 LAYOUT
0010242 01 000242 003442 003777
0010244 01 000244 004401 -----
0010245 01 000245 005002 -----
0010246 01 000246 055000 ----- 0010246
0010247 01 000247 040040 -----
0010250 01 000250 024055 -----
0010251 01 000251 055007 ----- 0010260
0010252 01 000252 003641 040007
0010254 01 000254 023440 -----
0010255 01 000255 026077 -----
0010256 01 000256 136060 010256 0010256
0010260
0010260 01 000260 103521 001475 MASACS
0010262
0010262 01 000262 140341 -----
0010263 01 000263 041362 -----
0010264 01 000264 016556 177760

18 KEEPDR
19 LAL R0,I_OBUF-1,RAO # SET UP BUFFER ADDRESS.
20 LN R3,BUFBLK # NUMBER OF BUFFERS PER BLOCK.
21 CLRPT
22 MIMODE ZPT # CLEAR THE PROGRAM TIMER.
23 MIS 0
24 DATA ZPTX
25 BX R3,BUFERS # TEST IF BLOCK IS COMPLETE.
26 LI R10,TSTAT # PREPARE TO SCAN FOR CRC.
27 SMIO
28 HA
29 TIO
30 BNC
31 LRM CRCLR # AN ERROR EXISTS. DO RECOVERY.
32 LAL R0,R2,M(BLKADR) # SEQUENTIAL BLOCK CHECK.
33 NI R2,I_OBUF,RAO # RECOVER BLOCK NUMBER JUST READ IN.
34 AN R2,M(BLKADR) # ISOLATE BLOCK NUMBER.
35 SR R0,R2
36 BNC * # CHECK IF THIS BLOCK IS VALID.
37 L R2,0(RAO) # BLOCK READ IN IS OUT OF SEQUENCE.
38 TBN R2,S(E0F) # RESTORE TRACK AND EOF DESIGNATIONS.
39 BNC NOSTOP #IS THIS AN EOF BLOCK?
40 LI R10,INIT #PREPARE TO STOP UNIT FOR TRACK SWITCH.
41 SMIO
42 SBN R3,15
43 BX R3,* #ASSUME R3 IS ZERO
44 NOSTOP #TIME FOR APPROX. 70 MSEC.
45 LI R5,BLKSIZE-3 # PREPARE BUFFER LENGTH.
46 NEWLA2
47 L R14,1(RAO) # RECOVER LENGTH AND 4 ADR. BITS.
48 LA R15,2(RAO) # RECOVER LOW 16 ADR BITS.
49 LRM R6,R14,MSK(12,4) # SET UP PROG. LENGTH.

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CIPL W77D

0010266 01 000266 010544 -----	01	RRN	R6,4	
0010267 01 000267 004136 -----	02	SN	R5,2	# ADJUST WRD/BLK COUNT FOR ABOVE.
0010270 01 000270 055017 ----- 0010307	03	BNC	ZROER2	
0010271	04	SNL	RA1,1	# ADJUST DESTINATION ADR. FOR RELOAD.
0010271 01 000271 004377 -----	-001- 05	SN	RA1+1,1	
0010272 01 000272 054002 ----- 0010274	-001- 06	BC	IFS283	
0010273 01 000273 004357 -----	-001- 07	SN	RA1,1	
0010274	08	DATACHK2		
0010274 01 000274 136140 010301 0010301	09	BX	R6,DATAVL2	# IF DATA AVAILABLE STORE IT.
0010276 01 000276 014125 -----	10	TZ	R5	# CHECK IF BUFFER IS EXHAUSTED?
0010277 01 000277 054010 ----- 0010307	11	BC	ZROER2	#GO TO MAIN LINE CODE FOR MORE BLOCKS.
0010300 01 000300 053762 ----- 0010262	12	B	NEWLA2	#CONTINUE THROUGH BLOCK.
0010301	14	DATAVL2		
0010301 01 000301 141061 -----	15	LA	R3,1(RA0)	# GET PROG. WRD.
0010302	16	L ONL	1(RA1)	# DO SAFE READ TO AVOID COM CORR
0010302 01 000302 076021 -----	-001- 17	STAF	1(RA1)	
0010303 01 000303 136260 -----	-001- 18	DATA	B(1011110010110000)	
0010304 01 000304 045461 -----	19	# THE ABOVE IS	NEEDED TO SET UP SDR1	FOR FOLLOWING STORE.
0010305 01 000305 036120 010274 0010274	20	STA	R3,1(RA1)	# STORE PROG. WRD.
	21	BX	R5,DATACHK2	# CONT. PROG. RELOAD IF BUF. NOT EXHAUSTED.
0010307	23	ZROER2		
0010307 01 000307 122037 -----	24	ZBN	R1,15	# CLEAR ERROR RECOVERY IP BIT.
0010310 01 000310 024055 -----	25	TBN	R2,S(E0F)	# IS THIS AN EOF BLOCK.
0010311 01 000311 055710 ----- 0010221	26	BNC	KEEPRD	#PREPARE FOR NEXT BLOCK.
0010312 01 000312 053701 ----- 0010213	27	B	MOREBOT	# CONTINUE RELOAD
0010313	28	BUFERS		
0010313 01 000313 103253 -----	29	LN	R10,BSTAT	# ASSUME COMMAND FOR BUFFER STAT IS 11.
0010314	30	RESND2		
0010314	31	CALL	ORDOUT	# SEND COMMAND
0010314 01 000314 137020 013276 0013276 -001-	32	BSA	ORDOUT	
0010316 01 000316 124267 -----	33	TBN	R11,S(BR)	# IS BR SET?
0010317 01 000317 055775 ----- 0010314	34	BNC	RESND2	
0010320 01 000320 003641 044013	35	LI	R10,BSUNLDON	# BR IS SET. SET UP UNLOAD STATE.
0010322	36	CALL	ORDOUT	
0010322 01 000322 037020 013276 0013276 -001-	37	BSA	ORDOUT	
0010324 01 000324 103641 120013	38	LI	R10,BCLROCN	# CLEAR THE OFF-LINE COUNTER.
0010326	39	CALL	ORDOUT	
0010326 01 000326 037020 013276 0013276 -001-	40	BSA	ORDOUT	
0010330 01 000330 103501 000077	41	LI	R4,WRDBUF-1	# SET UP WRDS/BUF COUNT.
0010332 01 000332 003641 100007	42	LI	R10,SD	# PREPARE BUFFER UNLOAD COMMAND.
0010334	43	WRDMORE2		
0010334	44	CALL	ORDOUT	
0010334 01 000334 137020 013276 0013276 -001-	45	BSA	ORDOUT	
0010336 01 000336 145261 -----	46	STA	R11,1(RA0)	# STORE INCOMING DATA AWAY.
0010337 01 000337 036100 010334 0010334	47	BX	R4,WRDMORE2	# CHECK IF MORE WORDS ARE IN BUFFER.
0010341 01 000341 003641 020013	48	LI	R10,BCLRBRF	# PREPARE TO CLEAR BR.
0010343	49	CALL	ORDOUT	

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CIPL W77D

0010343 01 000343 037020 013276 0013276 -001- 01 BSA ORDOUT
 0010345 01 000345 153657 ----- 0010224 02 B CLRPT

06 # ERROR RECOVERY FOR INITIAL BOOT LOADER.
 07 CR CER
 08 TBN R1,15 # CHECK IF RECOVERY WAS ALREADY IP.
 09 BC * # YES KILL BOOT
 10 SBN R1,15 # SET RECOVERY BIT.
 11 LI R10,INIT
 12 SMIO # SEND INIT ORDER TO STOP AND INITIALIZE
 TDC.
 14 SBN R3,15 # TIMEOUT CONSTANT FOR APROX. 70MSEC. (R3
 MUST BE 0)
 16 STPT2
 17 BX R3,STPT2 # WAIT 70MSEC BEFORE NEXT ORDER.
 18 LI R10,TBS # SET UP BACKSPACE ORDER.
 19 TBN R2,S(TRCK) # CHECK WHICH TRCK WAS READ.
 20 BC NOONE2
 21 SBN R10,S(TR) # SET TRK TO ONE SINCE ERROR ON ZERO.
 22 NOONE2
 23 CALL ORDOUT
 24 BSA ORDOUT
 25 LI R10,SST
 26 RESTAT2
 27 CALL ORDOUT
 28 BSA ORDOUT
 29 CIRM R11,0,8,MSK(4)
 30 BNC RESTAT2
 31 SBN R3,15 # TIME FOR APROX 70 MSEC. R3 MUST BE ZERO.
 32 SVNTY2
 33 BX R3,SVNTY2
 34 LI R10,TRT
 35 TBN R2,S(TRCK)
 36 BC NONE2
 37 SBN R10,S(TR)
 38 NONE2
 39 CALL ORDOUT
 40 BSA ORDOUT
 41 B KEEP RD

45 *
 46 *
 47 * ONCE ALL OF THE BOOTSTRAP PROGRAM AND SUPPORTING INITIALIZATION
 48 * PROGRAMS ARE INPUTTED, THE SECOND PHASE OF BOOTSTRAP STOPS THE READING
 49 * OF THE TAPE AND INITIATES THE READING OF TRACK 1. ON TRACK 1 AT THIS

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CIPL W77D

01 * POINT IS WRITTEN A FILE OF CHECKSUMS AND MISCELLANEOUS INFORMATION
 02 * DEFINING A PORTION OF THE TAPE USED IN THE THIRD PHASE OF BOOTSTRAP.
 03 * ALL THIS INFORMATION IS STORED AT THE END OF THE BOOTSTRAP PROGRAM.
 04 * THE SECOND SEGMENT OF BOOTSTRAP IS NOW DONE AND THE INITIALIZATION
 05 * PROGRAM IS GIVEN CONTROL TO DO SOME HARDWARE INITIALIZATION AND TESTING.

0010410

0010410 01 000410 103024 -----
 0010411 01 000411 031000 013477 0013477
 0010413 01 000413 031400 013561 0003561
 0010415 01 000415 040400 -----
 0010416
 0010416 01 000416 145001 -----
 0010417 01 000417 041401 -----
 0010420 01 000420 036020 010416 0010416
 0010422 01 000422 030400 013503 0013503
 0010424 01 000424 016420 003777
 0010426 01 000426 016440 014000
 0010430 01 000430 010457 -----
 0010431 01 000431 034420 013542 0013542
 0010433 01 000433 034440 013537 0013537
 0010435 01 000435 034440 013541 0013541
 0010437 01 000437 030400 013504 0013504

0010441 01 000441 030420 013502 0013502
 0010443 01 000443 030420 013502 0013502
 0010444 01 000444 034420 013506 0013506
 0010446 01 000446 031420 013561 0003561

0010450 01 000450 010417 -----

0010451 01 000451 041425 -----
 0010452 01 000452 043420 -----
 0010453 01 000453 040421 -----
 0010454 01 000454 044021 -----
 0010455 01 000455 003421 016320
 0010457 01 000457 020031 -----
 0010460 01 000460 055003 ----- 0010463
 0010461 01 000461 003421 016340
 0010463

0010463 01 000463 134620 013522 0013522
 0010465 01 000465 034420 013531 0013531

0010467 01 000467 003001 -----
 0010470 01 000470 034400 013476 0013476

09 PHASE3

10 # OBTAIN CHECK-SUM HEADER INFORMATION

11 LN R1,4
 12 LAL R0,BASEGENR-1,RA0
 13 LAL R0,CHKSUM,RA1 #SET UP CHKSUM ADDRESS.
 14 L R0,0(RA1)
 15 INITLO
 16 STA R0,1(RA0) # INFORMATION GATHERED HERE IS
 17 LA R0,1(RA1) # 1. BASE ADR OF GENERIC
 18 BX R1,INITLO # 2. BASE ADR OF XLATE
 19 LL R0,BASEPAT
 20 LRM R1,R0,M(PTPOS) # RETRIEVE TAPE BLOCK NUMBER.
 21 LRM R2,R0,MSK(2,11) # RETRIEVE TRACK BITS
 22 RLN R2,1 #POSITION TRACK BITS FOR COMMANDS
 23 STL R1,CSTATE+N(DESTON) #PREPARE DESTINATION.
 24 STL R2,CSTATE+N(TR) #PREPARE TRACK
 25 STL R2,CSTATE+N(VERT) # SET UP VERIFY TRACK.
 26 LL R0,GEN4KNO # 3. NUMBER OF THE LAST 4K BLOCK OF XLATE ON
 TRACK 1.
 28 LL R1,LST4K1
 29 AR R1,R0
 30 STL R1,BXKONON
 31 LAL R1,CHKSUM,RA1 #SET UP CHKSUM ADDRESS.
 32 # 5. NUMBER OF 4K GENERIC BLOCKS.
 33 RLN R0,1 # PREPARE INDEX INTO FILE TO OBTAIN NO. OF
 XLATE CHKSUMS.
 35 LA R1,5(RA1) #ADJUST RA1 FOR INDEX OPERATION.
 36 LAX R1,R0(RA1)
 37 L R1,1(RA1) # GET NO. OF XLATION CHKSUMS.
 38 ST R1,1(RA0)
 39 LI R1,TUOADR
 40 CR R1,R9
 41 BNC NOTON # PLACE OFF-LINE TUENABLE INTO R1.
 42 LI R1,TU1ADR
 43 NOTON
 44 # ON-LINE TU ENABLE IS PLACED IN R9 BY MICROCODE
 45 STL R9,EAON
 46 STL R1,EAOFF # PLACE OFF-LINE EA INTO MEMORY
 47 # START OF RE-LOAD BASED ON 4K CHECKSUM TEST
 48 LN R0,1 # SIGNAL END OF LEG 1
 49 STL R0,OFLBOOTSW

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CIPL W77D

0010472 01 000472 037000 004760 CINIT 01 BL INITBOOT

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0010474
0010474 01 000474 103641 017415      05 READCKSUM
0010476 01 000476 023440 -----      06 LI      R10,TRT+E(12)      # READ TRACK 1
0010477      07 SMIO
0010477      08 RERT
0010477 01 000477 123500 -----      09 TIO
0010500 01 000500 055777 ----- 0010477 10 BNC      RERT
0010501 01 000501 053520 ----- 0010221 11 B      KEEPRD

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18 * UPON RETURN TO THE BOOTSTRAP PROGRAM, IT IS ASSUMED THAT THE PROCESSOR
19 * HAS PASSED A QUICK SANITY DETECTION TEST AND THE OTHER PROCESSOR HAS
20 * BEEN PLACED IN A NON-INTERFERING STATE. NOW THE STORES ARE READY TO
21 * UNDERGO A CHECKSUM TEST OF THEIR CONTENT.
22 *
23 *
24 * THE STORES ARE CHECKED ACROSS FOUR THOUSAND WORDS, SINCE THIS IS THE
25 * SMALLEST WRITE PROTECTED SEGMENT OF MEMORY. ONLY PROGRAM AND DATA
26 * ARE CHECKED SINCE OBVIOUSLY TEMPORARY MEMORY HAS NO FIXED CHECKSUM
27 * ASSOCIATED WITH IT. THE BOOTSTRAP PROGRAM IS AWARE OF THE STORE LAYOUT
28 * IN RESPECT TO PROGRAM AND TEMPORARY STORE FROM INFORMATION STORED IN
29 * THE CHECKSUM FILE. AS THE CHECKSUM ALGORITHM IS APPLIED TO EACH BLOCK
30 * OF MEMORY A TABLE IS CREATED TO RETAIN THE PASS-FAIL STATUS OF EACH BLOCK.
31 * FOR EACH BLOCK OF PROGRAM THAT PASSES AND EACH BLOCK OF TEMPORARY STORE
32 * THAT IS ENCOUNTERED, AN ASSOCIATED WORD IN THIS TABLE IS ZEROED. EVERY
33 * BLOCK OF MEMORY DETERMINED MUTILATED SETS THE CORRESPONDING TABLE ENTRY
34 * TO A NON-ZERO STATE.
35 *
36 *
37 * A SPECIAL ENTRY CAN BE MADE TO THIS PORTION OF THE BOOTSTRAP PROGRAM
38 * BY THE INITIALIZATION PROGRAM WHICH REQUESTS THAT THE ENTIER STORE
39 * BE RELOADED REGARDLESS OF THE STATUS OF THE CHECKSUMS. UNDER
40 * THIS MODE, THE ENTIER TABLE IS FORCED NON-ZERO EXCEPT THE WORDS ASSOCIATED
41 * WITH TEMPORARY STORE WHICH ARE NEVER LOADED.

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0010502
0010502 01 000502 103220 -----      45 BOOTLOAD
0010503 01 000503 014000 -----      46 ZR      R9      # ZERO FLAG REGISTER
0010504      47 TZ      R0      # CF = 1 MEANS QUICK (SELECTIVE) RELOAD
0010504      48 IF      CF = 0 THEN 01 R9,ES(BAD4K,DOALL)
0010504 01 000504 054003 ----- 0010507 -001- 49 BC      IFS297

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CIPL W77D

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0010505 01 000505 003623 000005 -001- 01 OI R9,ES(BAD4K,DOALL) #
0010507 -001- 02 IFS297
0010507 03 CALL OFLB00TTST
0010507 01 000507 137020 013373 0013373 -001- 04 BSA OFLB00TTST
0010511 01 000511 155007 ----- 0010520 05 BNC SKIPOFLSETUP
0010512 06
0010512 01 000512 003021 ----- 07 LN R1,ES(OVLOF)
0010513 01 000513 007741 ----- 08 LSR MS,R1 # ALLOW LOCK STATE IN OFFLINE BOOTSTRAP
0010514 01 000514 030400 013476 0013476 09 LL R0,OFLB00TSM
0010516 01 000516 024017 ----- 10 TBN R0,S(ALLMAS)
0010517 01 000517 030220 ----- 11 ICF R9,S(DOALL) # FULL/PARTIAL RELOAD
0010520 12
0010520 13 SKIPOFLSETUP
0010520 01 000520 172631 ----- 14 HN R9,9 # SAVE R9

16 # VARIOUS RELOAD OPTIONS ARE AVAILABLE THRU SSP BUTTONS.
0010521 01 000521 003621 016160 CBLM 17 LI R9,SSPIOADR
0010523 01 000523 003641 100531 18 LI R10,0(100531) # SET CRITICAL ALARM
0010525 19 CALL OFLB00TTST
0010525 01 000525 037020 013373 0013373 -001- 20 BSA OFLB00TTST
0010527 01 000527 154002 ----- 0010531 21 BC SKIPCRITM
0010530 01 000530 023400 ----- 22 SIO
0010531 23 SKIPCRITM
0010531 01 000531 103210 ----- 24 LN R8,8
0010532 25 MY1
0010532 01 000532 136200 010532 0010532 26 BX R8,MY1 #TIME FOR RESPONSE.
0010534 01 000534 003641 000162 CBLM 27 LI R10,SSPAB1 # SCAN SSP TO RECORD APPL. RELOAD OPTIONS.
0010536 01 000536 023400 ----- 28 SIO
0010537 01 000537 003210 ----- 29 LN R8,8
0010540 30 MY2
0010540 01 000540 136200 010540 0010540 31 BX R8,MY2
0010542 01 000542 023500 ----- 32 TIO
0010543 01 000543 055003 ----- 0010546 33 BNC NOANS
0010544 01 000544 034660 013545 0013545 34 STL R11,SSPSV # SAVE RESULT FOR LATER SCANS.
0010546 35 NOANS
0010546 01 000546 103621 016520 36 LI R9,0(16520) #SEND INIT TO TTYC
0010550 01 000550 003641 000201 37 LI R10,0(201)
0010552 38 CALL OFLB00TTST
0010552 01 000552 037020 013373 0013373 -001- 39 BSA OFLB00TTST
0010554 01 000554 154002 ----- 0010556 40 BC SKIPTTYCINIT
0010555 01 000555 023440 ----- 41 SMIO
0010556 42 SKIPTTYCINIT

0010556 01 000556 172231 ----- 44 GN R9,9
0010557 01 000557 034620 043461 CTSD 45 STL R9,SYSTM # INSURE GOOD PARITY IN SYSTM
0010561 01 000561 031120 013565 0003565 46 LAL R5,CHKSUM+N(PROGBLKS),RAO # SET UP CHKSUM TABLE ADDRESS
0010563 01 000563 006254 ----- 47 LR R10,RAO # PUT RAO IN R10,R11
0010564 01 000564 006275 ----- 48 LR R11,RAO+1
0010565 01 000565 031400 000000 49 LAL R0,0,RA1 # ZERO RA1

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                                01 CIPL  OW  0(567)          # 12432
                                -001- 02  NOTE ***** THE FIRST ADDRESS OVERWRITTEN IS 000567 *****

0010567                                05 CALCHASH
0010567 01 000567 137000 013422 0013422 -001- 06 CIPL  BGNP  0(3422)          # 12432
                                           -001- 07  BL    XXX303
                                           -001- 08  NOTE  CIPL 'CSECT'
                                           -001- 09  NOTE  ***** PATCH AREA BEGINS AT 003422 *****

0013422                                -001- 12 XXX303 PATCHAREA
0013422 01 003422 103000 -----                13  ZR    RO
0013423 01 003423 034400 013477 0013477                14  STL   RO,HASHSAVE      # ZERO HASHSUM VALUE
0013425 01 003425 006011 -----                15  LR    RO,R9
0013426                                16  CALL  NOTESTCK
0013426 01 003426 037021 016321 MASACS -001- 17  BSA   NOTESTCK
0013430                                18  ENDP
0013430 01 003430 137000 010571 0010571 -001- 19  BL    XXX306          # 12432
                                           -001- 20  NOTE ***** LAST PATCH ADDRESS USED IS 003431 *****
                                           -001- 21  NOTE ***** NUMBER OF PATCH WORDS USED IS 8 (DECIMAL) *****

0010571                                -001- 24 XXX306 OWCONTINUE
0010571                                25  TAKEOUT 1
0010571 01 000571 106000 -----                -001- 26  LR    0,0
0010572                                27  EOW
                                           -001- 28  NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 000571 *****
                                           *

                                32 DDELETE NOTE 1
0010572 01 000572 124000 -----                33  TBN   RO,0          # NOTEST OVERRIDE ?
0010573 01 000573 030223 -----                34  ICF   R9,S(NOTEST)
0010574 01 000574 053066 ----- 0010662          35  B     R5CHK

0010575                                37 CHKSUMLP
0010575 01 000575 141141 -----                38  LA    R6,1(RAD)      # READ HASHSUM CONTROL WORD FOR THIS ENTRY
0010576 01 000576 041161 -----                39  LA    R7,1(RAD)      # READ HASHSUM VALUE
0010577 01 000577 016446 017777                40  LRM   R2,R6,H(HASHLEN) # SAVE LENGTH FOR LOOPS
0010601 01 000601 024223 -----                41  TBN   R9,S(NOTEST)
0010602 01 000602 054034 ----- 0010636          42  BC    WORKTABLE
0010603 01 000603 024220 -----                43  TBN   R9,S(DOALL)
0010604 01 000604 030156 -----                44  ICF   R6,S(FORCOPY)

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0010605 01 000605 024157 ----- 01 TBN R6,S(TSFLG) # TEST FOR TEMPORARY STORE BLOCK
0010606 02 IF CF = 1 THEN RGBEGIN
0010606 01 000606 055011 ----- 0010617 -001- 03 BNC IFS311
0010607 01 000607 006102 ----- 04 LR R4,R2 # SET UP LENGTH
0010610 01 000610 053005 ----- 0010615 05 B WORDOK # DECREMENT COUNT

0010611 07 PARCORRLP # LOOP TO CORRECT BAD PARITY IN TEMPORARY STORE

0010611 09 L_ONLX R4(RA1)
0010611 01 000611 176064 ----- -001- 10 STAFX R4(RA1)
0010612 01 000612 136260 ----- -001- 11 DATA B(1011110010110000)
0010613 01 000613 055002 ----- 0010615 12 BNC WORDOK
0010614 01 000614 046404 ----- 13 STX R0,R4(RA1) # CORRECT PARITY
0010615 14 WORDOK
0010615 01 000615 136100 010611 0010611 15 BX R4,PARCORRLP
0010617 16 RGEND # END OF TS SECTION
0010617 -001- 17 IFS311

0010617 01 000617 116406 140000 19 LRM R0,R6,M(TSFLG)+M(FORCOPY)
0010621 01 000621 014000 ----- 20 TZ R0
0010622 21 IF CF = 1 THEN RGBEGIN
0010622 01 000622 055014 ----- 0010636 -001- 22 BNC IFS314
0010623 01 000623 006002 ----- 23 LR R0,R2 # SET UP LENGTH FOR HASHSUM CALC.
0010624 01 000624 030420 013477 0013477 24 LL R1,HASHSAVE # OLD HASHSUM VALUE
0010626 01 000626 024221 ----- 25 TBN R9,S(PASS) # GENERIC/TRNSLN FLAG
0010627 26 CALL HASHSUM
0010627 01 000627 037021 016234 MASACS -001- 27 BSA HASHSUM
0010631 01 000631 115027 ----- 28 XR R1,R7 # COMPARE CALCULATED & STORED VALUES
0010632 01 000632 014401 ----- 29 OR R0,R1 # R0 = 0 MEANS MUST RELOAD 4K MAS BLOCK
0010633 01 000633 054003 ----- 0010636. 30 BC NOCOPY
0010634 01 000634 026156 ----- 31 SBN R6,S(FORCOPY)
0010635 01 000635 026222 ----- 32 SBN R9,S(BAD4K) # RELOADING REQUIRED FLAG
0010636 33 NOCOPY
0010636 34 RGEND # END OF CALCULATION
0010636 -001- 35 IFS314

0010636 37 WORKTABLE
0010636 01 000636 107254 ----- 38 EXR R10,RAD
0010637 01 000637 007275 ----- 39 EXR R11,RAD+1
0010640 01 000640 045141 ----- 40 STA R6,1(RAD) # WRITE NEXT WORKTABLE ENTRY
0010641 01 000641 007254 ----- 41 EXR R10,RAD
0010642 01 000642 007275 ----- 42 EXR R11,RAD+1

0010643 44 ARL RA1,R2 # INC. FOR NEXT CALCULATION
0010643 01 000643 001762 ----- -001- 45 AR RA1+1,R2
0010644 01 000644 055002 ----- 0010646 -001- 46 BNC IFS317
0010645 01 000645 004741 ----- -001- 47 AN RA1,1
0010646 01 000646 116417 077777 48 LRM R0,RA1+1,E(15)-1 # IS RA1 ON A 32K MAS BOUNDARY?
0010650 49 IF R0 = 0 THEN ZR R7 # NEW CALCULATION

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0010650 01 000650 014000 -----
0010651 01 000651 055002 ----- 0010653
0010652 01 000652 003160 -----
0010653
0010653 01 000653 134560 013477 0013477
0010655
0010655 01 000655 037020 013373 0013373
0010657 01 000657 154003 ----- 0010662

-002- 01 TZ RO
-001- 02 BNC IFS318
-001- 03 ZR R7 # NEW CALCULATION
-001- 04 IFS318
05 STL R7,HASHSAVE # FOR THE NEXT CALCULATION
06 CALL OFLB00TTST
07 BSA OFLB00TTST
08 BC SKIPRESEPT
09 CIPL 0(660) # 12432
-001- 10 NOTE ***** THE FIRST ADDRESS OVERWRITTEN IS 000660 *****

0010660 01 000660 037000 013432 0013432
-001- 13 CIPL BGNP 0(3432) # 12432
-001- 14 BL XXX323
-001- 15 NOTE CIPL 'CSECT'
-001- 16 NOTE ***** PATCH AREA BEGINS AT 003432 *****

0013432
0013432
0013432 01 003432 137020 001150 CBLM
0013434 01 003434 117770 037400
0013436 01 003436 055010 ----- 0013446
0013437 01 003437 071420 -----
0013440 01 003440 003621 016520
0013442 01 003442 003641 000207
0013444 01 003444 023400 -----
0013445 01 003445 071400 -----
0013446
0013446
0013446 01 003446 137000 010662 0010662
-001- 19 XXX323 PATCHAREA
-001- 20 CALL RESEPT
-001- 21 BSA RESEPT
22 CIRM R15,0,8,0(077) # RING BELL EVERY OTHER 4K BLOCK
23 BNC NOBELL
24 HA
25 LI R9,0(16520) # TTY
26 LI R10,TTY_BEL # RING BELL
27 SIO
28 GA
29 NOBELL
30 ENDP # 12432
-001- 31 BL XXX326
-001- 32 NOTE ***** LAST PATCH ADDRESS USED IS 003447 *****
-001- 33 NOTE ***** NUMBER OF PATCH WORDS USED IS 14 (DECIMAL) *****

0010662
0010662
-001- 36 XXX326 OMCONTINUE
-001- 37 EOW # 12432
-001- 38 NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 000661 *****
*

0010662
0010662
0010662 01 000662 136120 010575 0010575
42 SKIPRESEPT
43 R5CHK
44 BX R5,CHKSUMLP

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A05

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0010664 01 000664 041122 -----	01	LA	R5,2(RAD)	# GET NUMBER OF TRNSLN ENTRIES
0010665 01 000665 024221 -----	02	TBN	R9,S(PASS)	# GENERIC OR TRNSLN PASS
0010666 01 000666 026221 -----	03	SBN	R9,S(PASS)	# SET TRNSLN FLAG
0010667 01 000667 055700 ----- 0010567	04	BNC	CALCHASH	# RESTART CHKSUM LOOP FOR TRNSLN
0010670 01 000670 024222 -----	08	# WORK TABLE COMPLETED		
0010671 01 000671 054016 ----- 0010707	09	TBN	R9,S(BAD4K)	# CF = 0 MEANS MAS PERFECT AS IS
0010672 01 000672 030660 013545 0013545	10	BC	RL0D	
0010674 01 000674 003662 140000	11	LL	R11,SSPSV	# BACKDATE BUTTONS STATUS
0010676 01 000676 055011 ----- 0010707	12	NI	R11,0(140000)	# BACKDATE REQUESTED?
0010677	13	BNC	RL0D	
0010677 01 000677 037020 013373 0013373 -001-	14	CALL	OFLBOOTTST	
0010701 01 000701 150400 005166 CINIT	15	BSA	OFLBOOTTST	# NO RELOAD NEEDED - GO TO CINIT
0010703 01 000703 003002 -----	16	BNCL	BOOTRTN	# SIGNAL END OF LEG 2
0010704 01 000704 034400 013476 0013476	17	LN	RD,2	
0010706 01 000706 056540 -----	18	STL	RD,OFLBOOTSW	# OFFLINE BOOT HALT
	19	HALT		

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CIPL

W77D

0010707

01 RLOD

```

02 *
03 *
04 * THIRD PHASE
05 *
06 *
07 * THE COMPLICATED PORTION OF BOOTSTRAPING NOW BEGINS. IN AN EFFORT TO
08 * MAXIMIZE THE USE OF THE SYSTEMS AVAILABLE POWER, AND THEREFORE REDUCE
09 * THE AMOUNT OF TIME REQUIRED TO RECOVER THE DOWNED SYSTEM, AN EFFORT
10 * WILL BE MADE TO USE BOTH TAPE DEVICES TO RELOAD THE SYSTEM, IN SOME
11 * LARGER SYSTEMS, UP TO 3 TRACKS OF THE TAPE DEVICE MAY CONTAIN PROGRAM
12 * AND SYSTEM PARAMETERS AND PROGRAM OVERWRITES. THEREFORE ONE TAPE DEVICE
13 * MAY BE USED TO UNLOAD ONE OR MORE OF THE TRACKS AS THE OTHER TAPE IS
14 * USED TO RECOVER INFORMATION ON THE REMAINING TRACK. ALSO, IF THE DATA
15 * IS LAYED OUT ON THE TAPE IN AN OPTIMUM FASHION, ONLY ONE PASS ACROSS
16 * THE TAPE WILL BE REQUIRED TO ACCESS ALL THE STORED INFORMATION ON THE TAPE.
17 * HOWEVER, IF THE SYSTEM HAS A TAPE OUT OF SERVICE, IT STILL IS CAPABLE OF
18 * HANDLING ALL THE TRACKS FROM ONE TAPE DEVICE AT A COST OF RECOVERY TIME.
19 *
20 *
21 * HANDLING BOTH TAPES REQUIRES A TIME SHARED DRIVER TO ASSURE THAT BOTH
22 * DEVICES ARE SERVICED PROPERLY. SOME SORT OF SOFTWARE TIMING IS ALSO
23 * REQUIRED TO AID IN THE MECHANICAL HANDLING ASPECTS OF TAPE DEVICES.
24 * THEREFORE THE THIRD PHASE OF THE BOOTSTRAP PROGRAM IS A LOOP OF 3 TASK
25 * SCHEDULERS (A,B,C) AND A SOFTWARE CLOCK AND PROGRAM TIMER RESET ROUTINE.
26 * THE CLOCK-RESET ROUTINE PASSES CONTROL TO THE 'A' SCHEDULER WHICH PASSES
27 * CONTROL TO THE 'B' SCHEDULER WHICH PASSES CONTROL TO THE 'C' SCHEDULER
28 * WHICH CONTINUES THE LOOP BY GIVING CONTROL TO THE CLOCK-RESET ROUTINE.
29 * THE ON-LINE SYSTEM WILL BE COMPRISED OF THE ACTIVE 3ACC AND ITS NUMERICALLY
30 * TIED TAPE UNIT. THE OTHER CC'S TAPE WILL BE CALLED THE OFF-LINE DEVICE.
31 *
32 *
33 * PRIOR TO THE START OF THE LOOP, THE OFF-LINE TAPE DEVICE
34 * IS SCANNED. FAILURE TO ESTABLISH A SUCCESSFUL PATH OF
35 * COMMUNICATION AT THIS TIME IS NOTED FOR FUTURE USE IN THE RELOAD LOOP.
36 * ALSO, THE MISCELLANEOUS DATA READ IN OFF THE CHECKSUM FILE IS PROCESSED
37 * AND PLACED IN THE APPROPRIATE CONTROL WORDS TO AID THE SCHEDULERS IN
38 * LOCATING THE GENERIC PROGRAM, TRANSLATION DATA, ETC.

```

0010707 01 000707 130400 013500 0013500	42	LL	RO,BASEGENR	
0010711 01 000711 031420 013520 0013520	43	LAL	R1,ASTATE,RA1	
0010713 01 000713 031020 013532 0013532	44	LAL	R1,BSTATE+N(TU00S),RA0	
0010715 01 000715 024017 -----	45	TBN	RO,S(WOPEN)	#HAD ERROR OCCURRED DURING XLATE WRITE
0010716 01 000716 022017 -----	46	ZBN	RO,S(WOPEN)	
0010717 01 000717 055003 ----- 0010722	47	BNC	FILEOK	#NO
0010720 01 000720 061160 -----	48	SBS	O(RA0),S(TU00S)	#FLAG B SCH. TO WAIT
0010721 01 000721 061563 -----	49	SBS	N(TU00S)(RA1),S(TU00S)	#FLAG A SCH. PROBLEM WITH XLATE

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0010722
0010722 01 000722 144401 -----
0010723 01 000723 061523 -----
0010724 01 000724 003401 066540
0010726 01 000726 030620 013531 0013531
0010730 01 000730 003641 040007
0010732 01 000732 023440 -----
0010733 01 000733 136000 010733 0010733
0010735 01 000735 023500 -----
0010736 01 000736 055013 ----- 0010751
0010737 01 000737 003641 002015
0010741 01 000741 023440 -----
0010742 01 000742 003012 -----
0010743 01 000743 136000 010743 0010743
0010745 01 000745 023500 -----
0010746 01 000746 055003 ----- 0010751
0010747 01 000747 024267 -----
0010750 01 000750 054004 ----- 0010754

0010751
0010751 01 000751 161160 -----
0010752 01 000752 034640 013511 0013511
0010754
0010754 01 000754 103401 177774 MASACS
0010756 01 000756 034400 013554 0013554
0010760 01 000760 030400 013502 0013502
0010762 01 000762 030420 013504 0013504
0010764 01 000764 001420 -----
0010765 01 000765 034420 013556 0013556
0010767 01 000767 030420 013505 0013505
0010771 01 000771 005020 -----
0010772 01 000772 034420 013507 0013507

0010774
0010774 01 000774 131060 013512 0013512
0010776 01 000776 040043 -----
0010777 01 000777 036040 011024 0011024
0011001 01 001001 003621 016520
0011003 01 001003 003641 000207
0011005
0011005 01 001005 037020 013373 0013373 -001-
0011007 01 001007 154002 ----- 0011011
0011010 01 001010 023400 -----
0011011
0011011 01 001011 140102 -----
0011012 01 001012 040121 -----

01 FILEOK
02 ST RO,N(PTPOS)(RA1) #SET UP A SCH. WITH GENERIC START BLOCK
03 SBS N(PTPKOWN)(RA1),S(PTPKOWN)
04 LI RO,INTERCOM # TIME CONSTANT
05 LL R9,EAOFF
06 LI R10,INIT
07 SMIO
08 BX RO,* # TIME FOR READ CONSTANT.
09 TIO
10 BNC TUOFOOS
11 LI R10,TSTAT
12 SMIO
13 LN RO,X(A)
14 BX RO,*
15 TIO
16 BNC TUOFOOS
17 TBN R11,S(TUR)
18 BC BSCHWORK
19 # THE OTHER TAPE CAN NOT BE ACCESSED
20 TUOFOOS
21 SBS O(RAO),S(TUOOS)
22 STL R10,MATEOOS # FLAG ON-LINES MATE HARDWARE OUT OF SERVICE.
23 BSCHWORK
24 LI RO,1-BLK4K
25 STL RO,BLKINCOF
26 LL RO,LST4K1
27 LL R1,GEN4KNO
28 AR R1,RO # INDEX INTO CHECKSUM TABLE FOR TRACK 2.
29 STL R1,BLKDIGOFF
30 LL R1,XLAT4KNO
31 SR R1,RO # TOTAL NUMBER OF XLATE BLOCKS ON TRACK 2.
32 STL R1,BXKONOFF # STORE BX CONSTANT IN MEMORY.

36 # THIS IS THE BEGINNING OF THE BOOTSTRAP LOOP.
37 BOOTLOOP
38 LAL R3,PATTERN,RAO
39 L R2,3(RAO) #COUNT
40 BX R2,STORECNT
41 LI R9,0(16520) #TTY ADR. OF MAINT TTY
42 LI R10,0(207) #SEND BELL DURING BOOT.
43 CALL OFLBOOTTST
44 BSA OFLBOOTTST
45 BC SKIPBELLRING
46 SIO #SEND BUT IGNORE RESULTS
47 SKIPBELLRING
48 L R4,2(RAO) #PATTERN2
49 L R5,1(RAO) #PATTERN1

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0011013	01	001013	010517	-----	01	RLN	R4,1	
0011014	01	001014	010521	-----	02	RRN	R5,1	
0011015	01	001015	044102	-----	03	ST	R4,2(RA0)	#PATTERN2
0011016	01	001016	044121	-----	04	ST	R5,1(RA0)	#THE PATTERN1
0011017	01	001017	014505	-----	05	OR	R4,R5	
0011020	01	001020	006064	-----	06	LR	R3,R4	
0011021	01	001021	044060	-----	07	ST	R3,0(RA0)	#PATTERN
0011022	01	001022	003441	000620	08	LI	R2,400	
0011024					09	STORECNT		
0011024	01	001024	144043	-----	10	ST	R2,3(RA0)	#COUNT
0011025	01	001025	012220	-----	11	PACK	DB	# FOR OFFLINE BOOT
0011026					12	CALL	OFLB00TTST	
0011026	01	001026	037020	013373 0013373	-001-	13	BSA	OFLB00TTST
0011030	01	001030	154005	----- 0011035	14	BC	SKIPLOADDB	
0011031					15	CALL	LDDB15_0	
0011031	01	001031	037020	006730 CINIT	-001-	16	BSA	LDDB15_0
0011033					17	CALL	RESETPT	# CLEAR TIMER AND START SYSTIM COUNTING
0011033	01	001033	137020	001150 CBLM	-001-	18	BSA	RESETPT
0011035					19	SKIPLOADDB		

23 *
 24 *
 25 * A SCHEDULER
 26 *
 27 * THE 'A' SCHEDULER IS MAINLY RESPONSIBLE FOR TAPE OPERATIONS ASSOCIATED WITH
 28 * THE ON-LINE TAPE UNIT. THAT INVOLVES BRINGING IN THE SYSTEM PROGRAMS
 29 * WHICH ARE LOCATED ON TRACK 0 OF THE TAPE UNIT. IT ALSO BRINGS IN SYSTEM
 30 * PARAMETERS(TRANSLATION) WHICH ARE LOCATED ON TRACK 1 JUST BEYOND THE
 31 * END OF THE PROGRAM FILE(GENERIC). HOWEVER, IF THE B AND C SCHEDULERS ARE
 32 * RENDERED INOPERATIVE DUE TO THE FAILURE OF THE OFF-LINE TAPE SYSTEM,
 33 * THE 'A' SCHEDULER WILL ASSUME THIER FUNCTIONS AT A PREMIUM OF TIME.
 34 *
 35 *
 36 * ALL THE SCHEDULERS UTILIZE A BLOCK OF MEMORY WHICH CONTAINS CONTROL
 37 * AND STATUS INFORMATION. THE INFORMATION CONTAINED IN THESE BLOCKS
 38 * ARE
 39 *
 40 * 1. THE SUBSTATE IN CONTROL OF THE TAPE UNIT.
 41 *
 42 * 2. THE PRESENT TAPE POSITION OF THE UNIT CONTROLLED BY THIS SCHEDULER
 43 *
 44 * 3. THE I/O ADDRESS OF THE CONTROLLED TAPE UNIT
 45 *
 46 * 4. MISC. STORE WORD (BUFFER COUNTERS, TRACK NO., TIMING REQUESTS, ETC).
 47 *
 48 * 5. DESTINATION BLOCK (SEARCH MODE)
 49 *

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01 * 6. CYCLIC CHECK CHARACTER ACCUMULATOR
02 *
03 * 7. TIME CONSTANT STORAGE.
0011035 04 ASCHEDULE
05 *
06 *
07 * THE FIRST OPERATION OF THE 'A' SCHEDULER INVOLVES TESTING IF IT IS DOING
08 * ANY TIMING FOR ONE OF ITS SUBSTATES. IF IT IS, IT CHECKS TO SEE IF THE
09 * SOFTWARE TIMER HAS TIMED OUT FOR THE SUBSTATE THAT MADE THE REQUEST.
10 * UNLESS IT HAS TIMED OUT, CONTROL IS NOT PASSED TO THE SUBSTATE BUT
11 * TO THE 'B' SCHEDULER.

0011035 01 001035 103004 ----- 15 LN RD,4
0011036 01 001036 034400 013510 0013510 16 STL RD,NXTSCH
0011040 01 001040 031440 045265 LAYOUT 17 LAL R2,I_OBUF-1,RA1
0011042 01 001042 072756 ----- 18 HN R14,14
0011043 01 001043 072777 ----- 19 HN R15,15
0011044 01 001044 031040 013520 0013520 20 LAL R2,ASTATE,RAO # GET PRESENT STATE OF SCHEDULER
0011046 01 001046 072714 ----- 21 HN R12,12
0011047 01 001047 072735 ----- 22 HN R13,13
0011050 01 001050 051341 ----- 23 TBS N(INTREQ)(RAO),S(INTREQ) #HAS AN INTERRUPT REQUEST BEEN MADE
0011051 01 001051 055003 ----- 0011054 24 BNC NOWAY
0011052 01 001052 051361 ----- 25 TBS N(INTHNR)(RAO),S(INTHNR) #HAS IT BEEN HONORED?
0011053 01 001053 054073 ----- 0011146 26 BC NEXTSCHED
0011054 27 NOWAY
0011054 01 001054 140222 ----- 28 L R9,N(EA)(RAO) # SET UP ENABLE ADDRESS.
0011055 01 001055 051203 ----- 29 TBS N(TIMING)(RAO),S(TIMING) # CHECK IF A TIMING REQUEST IS IN THE
CONTROL
0011056 01 001056 055006 ----- 0011064 31 BNC PAX
0011057 01 001057 040005 ----- 32 L RD,N(TIMKON)(RAO) #GET TIME CONSTANT
0011060 33 CALL TIMCHKALT
0011060 01 001060 037020 013403 0013403 -001- 34 BSA TIMCHKALT
0011062 01 001062 154162 ----- 0011244 35 BC BSCHEDU # TIMOUT HAS OCCURED
0011063 01 001063 062203 ----- 36 ZBS N(TIMING)(RAO),S(TIMING) #CLEAR TIMING BIT

40 *
41 *
42 * AFTER THE TIME CHECK, THE 'A' SCHEDULER WILL PASS CONTROL TO ONE OF
43 * A SERIES OF SUBSTATES MOST OF WHICH WILL BE SHARE BY THE REMAINING
44 * SCHEDULERS. ONE SUBSTATE WHICH WILL NOT BE SHARED IS THE DESTINATION
45 * DETERMINING SUBSTATE DEVOTED TO THE 'A' SCHEDULERS MAIN TASK OF
46 * PROGRAM RELOAD AND TRACK 1 SYSTEM PARAMETER RELOAD,(CHECKTBL)

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0011064				01 PAX					
0011064	01	001064	156002	-----	02	BPAX	R2	# GO TO STATE IN CONTROL	
0011065	01	001065	153076	-----	03	B	CHECKTBL		
0011066	01	001066	153275	-----	04	B	FASTPOS		
0011067	01	001067	153205	-----	05	B	SLOWPOS		
0011070	01	001070	153321	-----	06	B	FSTOPTST		
0011071	01	001071	153335	-----	07	B	VERIT		
0011072	01	001072	153347	-----	08	B	SCANSTP		
0011073	01	001073	153356	-----	09	B	REDVER		
0011074	01	001074	153023	-----	10	B	REEVALX		
0011075	01	001075	153012	-----	11	B	READONX		
0011076	01	001076	153063	-----	12	B	BCKRECV1		
0011077	01	001077	153223	-----	13	B	STREAD1		
0011100	01	001100	153021	-----	14	B	CHKTIMX		
0011101	01	001101	153022	-----	15	B	AVERREC		
0011102	01	001102	153034	-----	16	B	AVERCONX		
0011103	01	001103	153006	-----	17	B	AREDCONX		
0011104	01	001104	153007	-----	18	B	ASCHCLNX		
0011105	01	001105	153010	-----	19	B	REPKNRFX		
0011106	01	001106	153000	-----	20	B	*		

0011107					24 READONX			
0011107	01	001107	137000	011546 0011546	25	BL	READON	
0011111					26 AREDCONX			
0011111	01	001111	137000	012375 0012375	27	BL	AREDCON	
0011113					28 ASCHCLNX			
0011113	01	001113	137000	012657 0012657	29	BL	ASCHCLN	
0011115					30 REPKNRFX			
0011115	01	001115	137000	012741 0012741	31	BL	REPKNRF	
0011117					32 REEVALX			
0011117	01	001117	137000	011506 0011506	33	BL	REEVAL	
0011121					34 CHKTIMX			
0011121	01	001121	137000	011512 0011512	35	BL	CHKTIM	

0011123					39 AVERREC			
0011123	01	001123	130400	013511 0013511	40	# A SCHEDULER RECOVERY FOR VERIFY FAILURE.		
0011125	01	001125	014000	-----	41	LL	RO,MATEOOS	
0011126	01	001126	050400	011767 0011767	42	TZ	RO	
0011130	01	001130	037040	013511 0013511	43	BNCL	RPCK	# FATAL DOUBLE ERROR. REPACK AND MRF.
0011132					44	A1S	MATEOOS	# MARK MATE BAD.
0011132	01	001132	103401	000015	45	NXTVER		
0011134	01	001134	037000	011662 0011662	46	LI	RO,VERCONX	# NEXT STATE FOR VERIFY RECOVERY
					47	BL	STOSUB	

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0011136					01 AVERCONT		
0011136	01	001136	130400	013532	02 LL	RO,BSTATE+N(STUS)	
0011140	01	001140	024006	-----	03 TBN	RO,S(STUS)	# CAN B SCHEDULER TAPE BE USED?
0011141	01	001141	055005	-----	04 BNC	NEXTSCHED	# MUST WAIT FOR UNIT TO FREE UP.
0011142	01	001142	030620	013531	05 LL	R9,BSTATE+N(EA)	
0011144	01	001144	044222	-----	06 ST	R9,N(EA)(RAD)	
0011145	01	001145	053244	-----	07 B	FSTOPTST	# CONTINUE RELOAD WITH OTHER UNIT

0011146					11 NEXTSCHED		
0011146	01	001146	130400	013510	12 LL	RO,NXTSCH	
0011150	01	001150	056000	-----	13 BPAX	RO	
0011151	01	001151	137000	010774	14 BL	BOOTLOOP	
0011153	01	001153	137000	011035	15 BL	ASCHEDULE	
0011155	01	001155	137000	012136	16 BL	BSCHEDULE	
0011157	01	001157	137000	012457	17 BL	CSCHEDULE	

0011161					19 BCKRCV1		
0011161	01	001161	137000	012131	20 BL	BCKRCV	

24 *
 25 *
 26 * THE 'CHECKTBL' SUBSTATE IS THE HOME POSITION OF THE 'A' SCHEDULE AND
 27 * MUST DETERMINE IF WORK REMAINS TO BE DONE. THE 'A' SCHEDULER KNOWS
 28 * THE NUMBER OF 4K PROGRAM SEGMENTS ON TRACK 0 AND THE NUMBER OF 4K
 29 * TRANSLATION SEGMENTS ON TRACK 1, AND USES THIS INFORMATION TO DETERMINE
 30 * THE TRACK BITS IN ITS CONTROL WORDS. THE SWITCHING OF THE TRACK
 31 * DESIGNATION WILL BE THE ONLY DIFFERENCE IN THE CODE LOADING
 32 * THE PROGRAM AND TRANSLATION DATA BY THE 'A' SCHEDULER.
 33 *
 34 *
 35 *
 36 * 'CHECKTBL' SCANS THE CHECKSUM PASS-FAIL TABLE CREATED EARLIER. EACH
 37 * ENTRY REPRESENTS A 4K WORD BLOCK OF MEMORY AND IS USED TO GENERATE
 38 * AN INDEX INTO THE TAPE VIA THE USE OF SYMBOLS DEFINING THE PHYSICAL
 39 * TAPE LAYOUT. NEXT THE 'A' SCHEDULER USES THE REMAINING SUBSTATES TO
 40 * EFFECT THE LOCATION AND RELOADING OF THE MUTILATED SEGMENTS OF PROGRAM
 41 * STORE AND THE SEGMENT OF TRANSLATION FOR WHICH IT IS PRIMARILY RESPONSIBLE.
 42 *
 43 *
 44 * THE GENERAL SEQUENCE OF EVENTS WHICH ARE BROUGHT ABOUT BY THE 'A'
 45 * SCHEDULERS SUBSTATE REQUESTS ARE
 46 *
 47 * 1. THE VERIFICATION, IF NEEDED, OF THE PRESENT TAPE POSITION
 48 *
 49 * 2. THE CALCULATION OF THE DISTANCE TO DESTINATION OF THE NEXT

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01 * MUTILATED 4K SEGMENT ON THE TAPE. (A TIME CALCULATION BASED
 02 * UPON TAPE SPEED, BLOCK SIZE ETC.)
 03 *
 04 * 3. THE DETERMINATION OF THE SPEED OF THE SEARCH BASED UPON THE
 05 * PHYSICAL DISTANCE TO DESTINATION.
 06 *
 07 * 4. THE TAPE IS SEARCHED
 08 *
 09 * 5. RE-VERIFICATION AFTER SEARCH (IF NEEDED, SLOW SEARCH IS A BLOCK
 10 * AT A TIME MOVEMENT THEREFORE NOT NEEDING VERIFICATION OF POSITION)
 11 *
 12 * 6. RE-CALCULATION OF DESTINATION DISTANCE OR READING OF THE 4K BLOCK
 13 * DEPENDING UPON THE RESULT OF THE DISTANCE CALCULATION.
 14 *
 15 *

0011163

```

19 CHECKTBL
20 # CHECK TABLE FOR WORK
21 TBS N(INTREQ)(RAO),S(INTREQ) #IS AN INTERRUPTION REQUEST PENDING
22 BNC ANALWRK
23 SBS N(INTHNR)(RAO),S(INTHNR) #ALLOW INTERRUPT.
24 B NEXTSCHED
25 ANALWRK
26 TBS N(STUS)(RAO),S(STUS) # CHECK IF ASCHEDULER IS FINISHED
27 BC BSCHDU
28 LL R2,BXKONON # GET NO OF 4K SEGMENTS
29 LAL RO,CHKSUM,RA1 #SET UP CHKSUM ADDRESS.
30 LA RO,5(RA1) #GET BASE ADDRESS OF WORKTBL.
31 LL R1,BLKINCON # LOGICAL INDEX INTO FILE
32 LL R3,BLKDIGON # INDEX INTO WORK TABLE
33 KEEPU
34 LL RO,LST4K1
35 CR RO,R2 # CHECK IF TRANS. IS TO BE READ IN
36 BNC NOTRKCHG
37 CIPL OW O(1206) # 13712
-001- 38 NOTE ***** THE FIRST ADDRESS OVERWRITTEN IS 001206 *****

41 CIPL BGNP O(3450) # 13712
-001- 42 BL XXX346
-001- 43 NOTE CIPL 'CSECT'
-001- 44 NOTE ***** PATCH AREA BEGINS AT 003450 *****

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0011163 01 001163 151341 -----
 0011164 01 001164 055003 ----- 0011167
 0011165 01 001165 061361 -----
 0011166 01 001166 053760 ----- 0011146
 0011167
 0011167 01 001167 151143 -----
 0011170 01 001170 054054 ----- 0011244
 0011171 01 001171 030440 013506 0013506
 0011173 01 001173 031400 013561 0003561
 0011175 01 001175 041405 -----
 0011176 01 001176 030420 013553 0013553
 0011200 01 001200 030460 013555 0013555
 0011202
 0011202 01 001202 130400 013502 0013502
 0011204 01 001204 020002 -----
 0011205 01 001205 055021 ----- 0011226

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0013450
0013450 01 003450 130400 013501 0013501
0013452 01 003452 034400 013500 0013500
0013454 01 003454 003421 177773 MASACS
0013456 01 003456 030400 013511 0013511
0013460
0013460 01 003460 037000 011210 0011210
-001- 01 XXX346 PATCHAREA
02 LL RO,BASEXLAT
03 STL RO,BASEGENR
04 LI R1,-BLK4K #RESET LOGICAL FILE INDEX
05 LL RO,MATE00S # 13712
06 ENDP
-001- 07 BL XXX348
-001- 08 NOTE ***** LAST PATCH ADDRESS USED IS 003461 *****
-001- 09 NOTE ***** NUMBER OF PATCH WORDS USED IS 10 (DECIMAL) *****

0011210
0011210 01 001210 114000 -----
0011211
-001- 12 XXX348 OWCONTINUE
13 TZ RO
14 EOW # 13712
-001- 15 NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 001210 *****

0011211 01 001211 055014 ----- 0011225
0011212 01 001212 051163 -----
0011213 01 001213 055012 ----- 0011225
0011214 01 001214 037040 013511 0013511
0011216
0011216 01 001216 130600 013531 0013531
0011220 01 001220 034620 013531 0013531
18 BNC SETRK
19 TBS N(TU00S)(RAO),S(TU00S) #IS THIS XLATE USELESS
20 BNC SETRK
21 A1S MATE00S #FORCE USE OF ONE TAPE.
22 USEB
23 LL R8,BSTATE+N(EA)
24 STL R9,BSTATE+N(EA) #IN THE EVENT OF ERROR, A WILL USE ITS
ORIGINAL UNIT

0011222 01 001222 006230 -----
0011223 01 001223 044222 -----
0011224 01 001224 062123 -----
0011225
0011225 01 001225 161301 -----
0011226
0011226 01 001226 136040 011246 0011246
0011230 01 001230 061143 -----
0011231 01 001231 030400 013532 0013532
0011233 01 001233 024007 -----
0011234 01 001234 055010 ----- 0011244
0011235 01 001235 040222 -----
0011236 01 001236 034620 013531 0013531
0011240 01 001240 022007 -----
0011241 01 001241 034400 013532 0013532
0011243 01 001243 044040 -----
0011244
0011244 01 001244 137000 012136 0012136
0011246
0011246 01 001246 104461 -----
0011247 01 001247 042403 -----
0011250 01 001250 034460 013555 0013555
0011252 01 001252 024017 -----
0011253 01 001253 054727 ----- 0011202
26 LR R9,R8
27 ST R9,N(EA)(RAO) #SET A TO USE B'S TAPE UNIT
28 ZBS N(PTPKOWN)(RAO),S(PTPKOWN) #FORCE VERIFY OF POSTION
29 SETRK
30 SBS N(TR)(RAO),S(TR)
31 NOTRKCHG
32 BX R2,DOIT
33 SBS N(STUS)(RAO),S(STUS) #FLAG A SCHEDULER FINISHED
34 LL R0,STATOFF # GET STATUS OF OFF-LINE TAPE
35 TBN R0,S(TU00S) # IS IT DEFECTIVE
36 BNC BSCHEDU
37 L R9,N(EA)(RAO) # SET UP OFF-LINE ENABLE FOR A SCHEDULER
38 STL R9,EAOFF
39 ZBN R0,S(TU00S)
40 STL R0,STATOFF
41 ST R2,N(STATE)(RAO)
42 BSCHEDU
43 BL BSCHEDULE
44 DOIT
45 AN R3,1
46 LX R0,R3(RA1) # GET WORK TABLE ENTRY.
47 STL R3,BLKDIGON
48 TBN R0,S(TSFLG) # WAS THIS ENTRY FOR CS.
49 BC KEEPUP # NO WORK NEEDED ON CS.

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0011254 01 001254 003420 000005 MASACS
 0011256 01 001256 024016 -----
 0011257 01 001257 055723 ----- 0011202

01 AI R1,BLK4K # NOT CS, INCREMENT BLOCK PER 4 K.
 02 TBN RO,S(FORCOPY) # TEST IF THIS 4K NEEDS REFRESH
 03 BNC KEEPUP

0011260 01 001260 034420 013553 0013553
 0011262 01 001262 030400 013500 0013500
 0011264 01 001264 001420 -----
 0011265 01 001265 002024 003777
 0011267 01 001267 034440 013506 0013506
 0011271 01 001271 051123 -----
 0011272 01 001272 055157 ----- 0011451
 0011273 01 001273 053213 ----- 0011506

07 # A 4K BLOCK OF STORE MUST BE BROUGHT IN.
 08 STL R1,BLKINCON # STORE LOGICAL INDEX AWAY.
 09 LL RO,BASEGENR # GET PHYSICAL ADDRESS OF GENERIC
 10 AR R1,RO # ADD LOGICAL INDEX TO BASE
 11 STM R1,N(DESTON)(RAO),M(DESTON)
 12 STL R2,BXKONON
 13 TBS N(PTPKOWN)(RAO),S(PTPKOWN) # IS POSITION VERIFICATION NEEDED.
 14 BNC REDVER
 15 B REEVAL

19 * SUBSTATES(DETAIL)

20 *

21 *

22 * SLOW POSITION STATE-FORWARD TIME SUBSTATE

23 *

24 * THE PRESENT POSITION OF THE TAPE IS COMPARED AGAINST THE DESTINATION.

25 * FROM THIS COMPARISON, A DETERMINATION OF THE DIRECTION OF THE SEARCH

26 * IS MADE. A BACKSPACE COMMAND IS GIVEN FOR REVERSE SEARCHES AND A TIMING

27 * REQUEST IS MADE TO ASSURE COMPLETION OF THE MOVEMENT BEFORE ANOTHER

28 * SUBSTATE IS GIVEN CONTROL. SINCE BACKSPACING DOES NOT INVOLVE ANY

29 * DATA TRANSFER, THE SLOW POSITION SUBSTATE WILL AGAIN GAIN CONTROL

30 * AFTER TIME OUT TO KEEP BACKSPACING UNTIL THE DESTINATION IS REACHED.

31 *

32 *

33 * A READ-A-BLOCK COMMAND IS GIVEN FOR SLOW FORWARD SEARCHES. THIS INVOLVES

34 * DATA TRANSFER INTO THE TAPE CONTROLLER AND THEREFORE REQUIRES SERVICING OF

35 * THE CONTROLLER SO THAT NO ERROR CONDITION RESULTS. A NEW SUBSTATE IS

36 * PRIMED TO TAKE OVER TO RESET THE BUFFER-READY FLAGS AND TIME FOR THE

37 * TERMINATION OF THE READ-A-BLOCK COMMAND. THIS SUBSTATE, READON,

38 * WILL REQUEST THAT THE EVALUATE POSITION SUBSTATE TAKE OVER WHEN

39 * THE TAPE STOPS. UPON ARRIVAL AT THE DESTINATION, THE TAPE IS SET INTO

40 * THE READ MODE TO START INPUTTING DATA, AND THE READON SUBSTATE IS SET UP

41 * TO READ AND STORE THE INCOMING DATA INTO MEMORY.

0011274

45 SLOWPOS

46 # THE TAPE IS BEING POSITIONED AT A BLOCK OF MEMORY. THE DESTINATION

47 # IS CLOSE ENOUGH TO REQUIRE SLOW SEARCHING.

0011274 01 001274 140001 -----

48 L RO,N(PTPOS)(RAO) # OBTAIN THE PRESENT TAPE POSITION OF UNIT

0011275 01 001275 040024 -----

49 L R1,N(DESTON)(RAO) # OBTAIN THE DESTINATION OF THE TAPE.

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0011276 01 001276 003402 003777	01	NI	RO,M(PTPOS)	
0011300 01 001300 003422 003777	02	NI	R1,M(PTPOS)	
0011302 01 001302 020001 -----	03	CR	RO,R1	#HAS DEST. BEEN REACHED.
0011303 01 001303 055032 ----- 0011335	04	BNC	REPOSI	
	05		#SPECIAL CHECK FOR ODD FUNCTION DONE OUT OF B SCHEDULER TO	
	06		#ASSURE THAT XLATE WAS WRITTEN CORRECTLY AT LAST UPDATE.	
0011304 01 001304 051304 -----	07	TBS	N(ERNO)(RAD),S(ERNO) #IS CHECKSUM LOOKUP ACTIVE?	
0011305 01 001305 055015 ----- 0011322	08	BNC	STREAD1	
0011306 01 001306 051764 -----	09	TBS	N(WOPEN)+4(RA1),S(WOPEN) #WAS XLATE WRITE ABORTED?	
0011307 01 001307 055006 ----- 0011315	10	BNC	XLATEOK	
0011310 01 001310 030420 013511 0013511	11	LL	R1,MATEOOS	#IS MATE OUT OF SERVICE
0011312 01 001312 014021 -----	12	TZ	R1	
0011313 01 001313 055002 ----- 0011315	13	BNC	XLATEOK	#IF MATE NOW OUT OF SERVICE MARK YOUR XLATE OK.
	15	SBS	N(TUOOS)(RAD),S(TUOOS)	
0011314 01 001314 061163 -----	16	XLATEOK		
0011315	17	SBS	N(SCHCON1)(RAD),S(SCHCON1) #MARK FUNCTION COMPLETE.	
0011315 01 001315 161343 -----	18	ZBS	N(ERNO)(RAD),S(ERNO) #CLEAR ERROR NOT ALLOWED.	
0011316 01 001316 062304 -----	19	ZR	RO	
0011317 01 001317 003000 -----	20	ST	RO,N(STATE)(RAD)	
0011320 01 001320 044000 -----	21	B	BBSCHB	
0011321 01 001321 053041 ----- 0011362	22		# THE TAPE IS IN POSITION TO BE READ.	
	23	STREAD1		
0011322	24	ZR	R1	
0011322 01 001322 103020 -----	25	STM	R1,N(BUFC)(RAD),M(BUFC) # CLEAR BUFFER COUNT.	
0011323 01 001323 002023 000017	26	L	R1,N(TR)(RAD)	# GET TRACK INFORMATION
0011325 01 001325 040021 -----	27	LI	R10,TRT	# PREPARE READ COMMAND.
0011326 01 001326 003641 007415	28	IRM	R10,R1,M(TR)	# INSERT PERTINENT TRACK INFO.
0011330 01 001330 016241 030000	29	CALL	ORDOUT	
0011332	30	BSA	ORDOUT	
0011332 01 001332 037020 013276 0013276 -001-	31	B	STREAD	
0011334 01 001334 153142 ----- 0011476	32	REPOSI		
0011335	33	SR	RO,R1	# SUBTRACT FROM PTP THE DESTINATION
0011335 01 001335 105001 -----	34	BNC	REDVER	# SEARCH IS FORWARD IN DIRECTION
0011336 01 001336 055113 ----- 0011451	35	L	RO,N(PTPOS)(RAD)	
0011337 01 001337 040001 -----	36	SN	RO,1	
0011340 01 001340 004017 -----	37	ST	RO,N(PTPOS)(RAD)	# UPDATE PTP FOR REVERSE SEARCH
0011341 01 001341 044001 -----	38	CRM	RO,R1,M(PTPOS)	# HAS DESTINATION BEEN REACHED WITH NEXT BACKSPACE.
0011342 01 001342 017001 003777				
	40	BNC	DOBKUP	
0011344 01 001344 055005 ----- 0011351	41	LI	RO,VERSTATE	# VERIFY NEEDED SINCE BACKSPACE MAY NOT WORK.
0011345 01 001345 003401 000004	42	ST	RO,N(STATE)(RAD)	
0011347 01 001347 044000 -----	43	SBS	N(ACTSEQ)(RAD),S(ACTSEQ) #SET SEQUENCE ERROR CHECK	
0011350 01 001350 061264 -----	44	DOBKUP		
0011351	45	CALL	TIMOUT	
0011351 01 001351 137020 111375 CSYSUB -001-	46	BSA	TIMOUT	
0011353 01 001353 000022 ----- MASACS	47	DATA	REDKON+1	
0011354 01 001354 144005 -----	48	ST	RO,N(TIMKON)(RAD)	
0011355 01 001355 061203 -----	49	SBS	N(TIMING)(RAD),S(TIMING) #REQUEST TIMING BE DONE	

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0011356 01 001356 003641 006415      01      LI      R10,TBS
0011360      02      CALL    ORDOUT
0011360 01 001360 037020 013276 0013276 -001- 03      BSA      ORDOUT
0011362      04 BBSCHB
0011362 01 001362 153564 ----- 0011146      05      B      NEXTSCHED
                                06 # A SLOW FORWARD SEARCH IS INPROGRESS.

```

```

10 *
11 *
12 * FAST POSITION SUBSTATE
13 *
14 * THIS SUBSTATE HAS THE TASK OF PLACING THE TAPE UNIT DEFINED IN R9 IN A
15 * FAST FORWARD OR FAST REVERSE SPEED TO ARRIVE AT A DESTINATION AS QUICKLY
16 * AS POSSIBLE. A TIME CONSTANT IS GENERATED BASED ON THE TAPES SPEED
17 * AND THE PRESENT TAPE POSITION AND THE REQUESTED DESTINATION. AFTER SETTING
18 * UP A TIMEING REQUEST, THE FAST POSITION SUBSTATE PLANTS A REQUEST THAT
19 * A NEW SUBSTATE GET CONTROL AFTER THE TIMEOUT OCCURES. THIS NEW SUBSTATE
20 * IS THE FAST STOP SUBSTATE.
21 *
22 *

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0011363      26 FASTPOS
0011363 01 001363 162123 -----      27 # A FAST SEARCH IS REQUIRED
0011364      28      ZBS      N(PTPKNOWN)(RAO),S(PTPKNOWN) # CLEAR PTP KNOWN BIT
0011364 01 001364 037020 013230 0013230 -001- 29      CALL    CONSGEN # GENERATE TIME CONSTANT
0011366 01 001366 140001 -----      30      BSA      CONSGEN
0011367 01 001367 003402 003777      31      L      R0,N(PTPOS)(RAO)
0011371 01 001371 040024 -----      32      NI      R0,M(PTPOS)
0011372 01 001372 003422 003777      33      L      R1,N(DESTON)(RAO)
0011374 01 001374 005020 -----      34      NI      R1,M(DESTON)
0011375 01 001375 003641 002415      35      SR      R1,R0 # CHECK IF FAST SPEED IS FORWARD OR REVERSE.
0011377 01 001377 054003 ----- 0011402      36      LI      R10,TFF
0011400 01 001400 003641 004415      37      BC      FASTFWD
0011402      38      LI      R10,TFR
0011402      39 FASTFWD
0011402 01 001402 137020 013276 0013276 -001- 40      CALL    ORDOUT
0011404 01 001404 103401 000003      41      BSA      ORDOUT
0011406 01 001406 044000 -----      42      LI      R0,FASTSTP
0011407 01 001407 061203 -----      43      ST      R0,N(STATE)(RAO) # SET UP FAST TIME STATE
0011410 01 001410 053752 ----- 0011362      44      SBS      N(TIMING)(RAO),S(TIMING)
                                45      B      BBSCHB

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CIPL W77D

01 * THE FAST STOP SUBSTATE.
 02 *
 03 * A TAPE UNIT HAS BEEN PLACED IN A FAST SPEED SEARCH AND THE TIME ALLOTTED
 04 * FOR THE SEARCH HAS EXPIRED. THIS SUBSTATE IS USED TO ISSUE A STOP ORDER
 05 * TO THE TAPE AND SET UP A NEW TIME CONSTANT GEARED TO THE RECOVERY
 06 * TIME OF THE TAPE UNIT FOR ITS TRANSITION FROM A HIGH SPEED TO STOP
 07 * CONDITION. THE NEW POSITION OF THE STOPPED TAPE IS UNKNOWN. THEREFORE
 08 * THIS SUBSTATE SETS UP THE NEXT STATE TO OBTAIN CONTROL. THIS NEW STATE
 09 * IS THE VERIFY SUBSTATE.
 10 *
 11 *

0011411				15	FSTOPTST	
0011411	01	001411	103641	000015	16	# A TIMEOUT HAS OCCURED SO A STOP MUST BE ISSUED TO TAPE UNIT
0011413				17	LI	R10,TSTOP
0011413	01	001413	037020	013276	18	CALL ORDOUT
0011415	01	001415	103401	000004	19	BSA ORDOUT
0011417				20	LI	RO,VERSTATE
0011417	01	001417	144000	-----	21	SETIMEST
0011420				22	ST	RO,N(STATE)(RAO)
0011420				23	SETIME	
0011420	01	001420	137020	111375	24	CALL TIMOUT
0011422	01	001422	000022	-----	25	BSA TIMOUT
0011423	01	001423	144005	-----	26	DATA REDKON+1
0011424	01	001424	061203	-----	27	ST RO,N(TIMKON)(RAO)
0011425	01	001425	053735	-----	28	SBS N(TIMING)(RAO),S(TIMING) # WAIT UNTIL TAPE STOPS
				0011362	29	B BBSCHB

33 * THE VERIFY SUBSTATES
 34 *
 35 * THIS SUBSTATE CHAIN IS CHARGED WITH OBTAINING THE POSITION OF THE
 36 * TAPE SPECIFIED IN R9. SINCE THE STOPPING OF A FAST TAPE SPEED MAY
 37 * HAVE POSITIONED THE TAPE HEADS OVER DATA, THE FIRST SUBSTATE 'VERIT'
 38 * WILL ATTEMPT TO PLACE THE READ HEADS IN AN INTER-BLOCK GAP. THIS
 39 * IS ACCOMPLISHED BY ISSUING A BACKSPACE COMMAND. A BACKSPACE COMMAND
 40 * WILL STOP ONLY IN AN INTER-BLOCK GAP AND IT REQUIRES NO SPECIAL SERVICING
 41 * EXCEPT TO TIME FOR ITS MAXIMUM EXECUTION TIME. THIS TIME IS EQUAL TO
 42 * READING ONE BLOCK OF DATA. THE 'VERIT' SUBSTATE REQUESTS THAT THE
 43 * 'REDVER' SUBSTATE NEXT GET CONTROL AFTER THIS TIMEOUT OCCURES.
 44 *
 45 *

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CIPL W77D

```

0011426
01 VERIT
02 # THE PRESENT TAPE POSITION IS NOT KNOWN AT THIS TIME. A BACKSPACE-READ
03 # SHOULD BE GIVEN TO GET THE BLOCK NUMBER.
04 LI R10,TBS
05 L RO,N(VER)(RAO) # ESTABLISH VERIFY TRACK.
06 IRM R10,RO,M(VER)
07 CALL ORDOUT
08 BSA ORDOUT
09 LI RO,SCNSTP
10 ST RO,N(STATE)(RAO)
11 B SETIMEST

```

```

0011441
15 SCANSTP
16 # THIS SUBSTATE IS CHARGED WITH WAITING FOR TIM TO GO AWAY
17 # BEFORE GOING TO THE NEXT SUBSTATE.
18 LI R10,TSTAT
19 CALL ORDOUT
20 BSA ORDOUT
21 TBN R11,S(TIM) #HAS TAPE IN MOTION GONE AWAY
22 BC BBSCHB #NO
23 LN RO,REDVERST #SET UP NEXT SUBSTATE.
24 B SETIMEST #TIME FOR TAPE RECOVERY FROM MOTION COMMAND.

```

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28 * THE READING OF A BLOCK OF DATA IS INITIATED BY THE 'REDVER' SUBSTATE
29 * WHICH PLACES THE 'READON' SUBSTATE IN AN UPDATE PRESENT TAPE POSITION
30 * ONLY MODE. UNDER THIS CONTROL A BLOCK OF DATA WOULD BE BROUGHT INTO
31 * THE I/O BUFFER AND THE CRC CALCULATED AND CHECKED. THE PRESENT TAPE
32 * POSITION WOULD THEN BE EXTRACTED AND STORED IN THE APPROPRIATE STORAGE.
33 * IF THE CRC FAILS, ANOTHER BLOCK IS READ BY REQUESTING THE 'REDVER'
34 * SUBSTATE AGAIN.
35 *
36 *

```

```

0011451
40 REDVER
41 # A READ IS TO BE INITIATED TO DETERMINE PRESENT TAPE POSITION.
42 LI R10,TSTAT
43 CALL ORDOUT
44 BSA ORDOUT
45 TBN R11,S(BOT) #DID BACKSPACE PUT TAPE AT BOT
46 BNC CONTVERIT #NO
47 ZR R3
48 STA R3,N(BLKADR)+1(RA1) #SET TO BLOCK ZERO
49 LI R10,INIT #TEMP*****

```

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CIPL W77D

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0011463
0011463 01 001463 037020 013276 0013276 -001- 01 CALL ORDOUT
0011465 01 001465 153243 ----- 0011730 02 BSA ORDOUT
0011466 01 001466 103641 003415 03 B LODEVAL
0011466 01 001466 103641 003415 04 CONTVERIT
0011470 01 001470 040003 ----- 05 LI R10,TRB
0011471 01 001471 016240 030000 06 L RO,N(VERT)(RAO) # ESTABLISH VERIFY TRACK.
0011473 01 001473 037020 013276 0013276 -001- 07 IRM R10,RO,M(VERT)
0011473 01 001473 037020 013276 0013276 -001- 08 CALL ORDOUT
0011475 01 001475 161243 ----- 09 BSA ORDOUT
0011476 01 001476 103401 000013 10 SBS N(STORNOT)(RAO),S(STORNOT) #BLOCK STORING DATA.
0011500 01 001500 044000 ----- 11 STREAD
0011501 01 001501 037020 111375 CSYSUB -001- 12 LI RO,TMCHECK #PREPARE NEXT STATE
0011503 01 001503 000002 ----- 13 ST RO,N(STATE)(RAO) # STORE READ VERIFY STATE.
0011504 01 001504 144005 ----- 14 CALL TIMOUT
0011505 01 001505 053655 ----- 0011362 15 BSA TIMOUT
0011505 01 001505 053655 ----- 0011362 16 DATA 2
0011505 01 001505 053655 ----- 0011362 17 ST RO,N(TIMKON)(RAO) # STORE TIME CONSTANT.
0011505 01 001505 053655 ----- 0011362 18 B BBSCHB

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22 * ONCE THE PRESENT TAPE IS KNOWN, THE 'REEVAL' SUBSTATE WILL BE REQUESTED
23 * TO DETERMINE IF ANOTHER SEARCH SEQUENCE IS REQUIRED TO GET TO THE
24 * DESTINATION. WHEN THE DESTINATION IS REACHED, THE SLOW POSITION SUBSTATE
25 * WILL RECOGNIZE IT AND INITIATE A READ OF THE APPROPRIATE TRACK AND THE
26 * DATA TRANSFER BEGINS. THE READING OF THE DATA WILL BE DONE BY THE
27 * 'READON' SUBSTATE.
28 *
29 *
30 * READON SUBSTATE
31 *
32 * THE 'READON' SUBSTATE WILL SERVICE A TAPE UNIT WHICH HAS BEEN PLACED
33 * IN A READ MODE. WHEN THE BUFFER READY FLAG IN THE TAPE DATA CONTROLLER
34 * BECOMES SET, THE 'READON' SUBSTATE UNLOADS A CONTROLLER BUFFER AND
35 * ACCUMULATES A PARTIAL CRC ON IT. THIS CRC IS STORED IN THE APPROPRIATE
36 * STORAGE UNTIL THE ENTIER BLOCK IS BROUGHT IN AND A COMPLETE CRC IS
37 * CALCULATED.
38 *
39 *

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0011506
0011506 01 001506 137020 013230 0013230 -001- 43 REEVAL
0011510 01 001510 144000 ----- 44 CALL CONSGEN
0011511 01 001511 053651 ----- 0011362 45 BSA CONSGEN
0011511 01 001511 053651 ----- 0011362 46 ST RO,N(STATE)(RAO)
0011511 01 001511 053651 ----- 0011362 47 B BBSCHB

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CIPL

W77D

0011512				01	CHKTIM			
0011512	01	001512	103641	002015	02	LI	R10,TSTAT	#PRIME TAPE FOR PRIMARY STATUS.
0011514				03	CALL	ORDOUT		
0011514	01	001514	037020	013276	04	BSA	ORDOUT	
0011516	01	001516	124272	-----	05	TBN	R11,S(TIM)	#IS TAPE MOVING.
0011517	01	001517	054006	-----	06	BC	NXTATE	
0011520				07	TOUTCHK			
0011520	01	001520	140005	-----	08	L	RD,N(TIMKON)(RAO)	
0011521				09	CALL	TIMCHKALT		#CHECK IF MINIMUM START TIME HAS ELAPSED.
0011521	01	001521	037020	013403	10	BSA	TIMCHKALT	
0011523	01	001523	155113	-----	11	BNC	CRCFAIL	
0011524	01	001524	053636	-----	12	B	BBSCHB	

0011525				16	NXTATE			
0011525	01	001525	103641	010007	17	LI	R10,SST	#MAKE SURE READ IS INPROGRESS.
0011527				18	CALL	ORDOUT		
0011527	01	001527	037020	013276	19	BSA	ORDOUT	
0011531	01	001531	117670	003407	20	CIRM	R11,7,8,MSK(3)	#CHECK IF UNIT IS READING
0011533	01	001533	154003	-----	21	BC	RON	
0011534				22	ERRLOOK			
0011534	01	001534	137020	013305	23	CALL	SCHLOOK	
0011536				24	BSA	SCHLOOK		
0011536	01	001536	103401	000010	25	RON		
0011540	01	001540	044000	-----	26	LI	RD,CONTREAD	
0011541				27	ST	RD,N(STATE)(RAO)		#SET UP READ SERVICING ROUTINE.
0011541				28	BGNTIM	SEC=3		
0011541	01	001541	037020	111375	29	CALL	TIMOUT	
0011543	01	001543	000171	-----	30	BSA	TIMOUT	
0011544	01	001544	144005	-----	31	DATA	121	# TIMEOUT+1
0011545	01	001545	053615	-----	32	ST	RD,N(TIMKON)(RAO)	
				33	B	BBSCHB		

0011546				40	READON			
0011546	01	001546	103641	000013	41	# STATE REQUIRED TO BRING DATA INTO MACHINE.		
0011550				42	LI	R10,BSTAT		# PREPARE TO LOOK AT BR BIT.
0011550	01	001550	037020	013276	43	CALL	ORDOUT	
0011552	01	001552	124267	-----	44	BSA	ORDOUT	
0011553	01	001553	055745	-----	45	TBN	R11,S(BR)	# CHECK BR BIT.
0011554				46	BNC	TOUTCHK		
0011554	01	001554	037020	111375	47	CALL	TIMOUT	#RESET TIME DELAY FOR BR FLAG
0011554	01	001554	037020	111375	48	BSA	TIMOUT	
0011556	01	001556	000022	-----	49	DATA	REDKON+1	

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0011557 01 001557 144005 ----- 01 ST RO,N(TIMKON)(RA0)
0011560 01 001560 003641 044013 02 # A BUFFER IS READY TO UNLOAD.
0011562 01 001562 037020 013276 0013276 -001- 03 LI R10,BSUNLON # SET UNLOAD STATE
0011564 01 001564 103641 120013 04 CALL ORDOUT
0011566 01 001566 037020 013276 0013276 -001- 05 BSA ORDOUT
0011570 01 001570 140003 ----- 06 LI R10,BCLROCN # CLEAR OFF-LINE COUNTER.
0011571 01 001571 016440 000017 07 CALL ORDOUT
0011573 01 001573 010452 ----- 08 BSA ORDOUT
0011574 01 001574 004401 ----- 09 L RO,N(BUFC)(RA0)
0011575 01 001575 044003 ----- 10 LRM R2,RO,M(BUFC) # LOAD UP BUFFER COUNT.
0011576 01 001576 003501 000077 11 RLN R2,6 # PREPARE FOR USE AS INDEX
0011600 01 001600 043402 ----- 12 AN RO,1
0011601 01 001601 003641 100007 13 ST RO,N(BUFC)(RA0) # UPDATE COUNT.
0011603 01 001603 123440 ----- 14 LI R4,WRDBUF-1 # SET UP WORDS PER BUFFER.
0011604 01 001604 003011 ----- 15 LAX RO,R2(RA1) # ADJUST RA1 BY INDEX.
0011605 01 001605 136000 011605 0011605 16 LI R10,SD # PREPARE TO UNLOAD.
0011607 01 001607 023500 ----- 17 ORDER
0011610 01 001610 055724 ----- 18 SMIO
0011611 01 001611 045661 ----- 19 LN RO,9
0011612 01 001612 036100 011603 0011603 20 HR
0011614 01 001614 003641 020013 21 BX RO,HR
0011616 01 001616 037020 013276 0013276 -001- 22 TIO
0011620 01 001620 103445 001400 MASACS 23 BNC ERRLOOK
0011622 01 001622 055540 ----- 0011362. 24 STA R11,1(RA1) # STORE INCOMING DATA AWAY,
0011623 01 001623 072356 ----- 25 BX R4,ORDER # KEEP GOING UNTIL BUFFER DONE.
0011624 01 001624 072377 ----- 26 LI R10,BCLRBRF # CLEAR BR BIT.
0011625 01 001625 040441 ----- 27 CALL ORDOUT
0011626 01 001626 040441 ----- 28 BSA ORDOUT
0011627 01 001627 040441 ----- 29 CI R2,LASTBUF # WAS THE BLOCK READ IN?
0011628 01 001628 040441 ----- 30 BNC BBSCHB
0011629 01 001629 040441 ----- 31 GN R14,14 # GET TEMP. I/O BUFFER ADDRESS
0011630 01 001630 040441 ----- 32 GN R15,15
0011631 01 001631 040441 ----- 33 L R2,(N(E0F)+1)(RA1)

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37 * AT THE END OF EACH BLOCK, THE END OF FILE BIT IS CHECKED TO SEE IF
38 * A STOP COMMAND SHOULD BE SENT TO TERMINATE THE READ. THEN THE CALCULATED
39 * CRC IS COMPARED AGAINST THE ONE STORED ON THE TAPE. FAILURE OF THIS
40 * CHECK DURING A NORMAL READ WILL RESULT IN THE STOPPING OF THE TAPE
41 * AND THE INITIATION OF A BLOCK RECOVERY ROUTINE (BCKRCV). THE 'REDVER'
42 * SUBSTATE WOULD BE REQUESTED IF THE PRESENT TAPE POSITION WAS BEING
43 * UPDATED AT THE TIME THE CRC FAILED.
44 *
45 * A CORRECT CRC RESULTS IN THE LOADING OF MEMORY WITH THE DATA STORED
46 * IN THE INPUTTED BLOCK. EACH BLOCK CONTAINS A LOADING ADDRESS AND A
47 * LENGTH FIELD FOR THE CONTAINED DATA.

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0011626
0011626 01 001626 103641 002015      01 CRCLOOK
0011630 01 001630 003073 -----      02      LI      R10,TSTAT      # PREPARE CRC CHECK.
0011631 01 001631 023440 -----      03      LN      R3,11
0011632 01 001632 136060 011632 0011632 04      SMIO
0011634 01 001634 023500 -----      05      BX      R3,*
0011635 01 001635 054027 ----- 0011664 06      TIO
0011636      07      BC      CRCOK
0011636 01 001636 103641 040007      08 CRCFAIL
0011636      09      LI      R10,INIT      # STOP THE TAPE UNIT
0011636      10 CIPL      OW      0(1640)      # 12432
-001- 11      NOTE      ***** THE FIRST ADDRESS OVERWRITTEN IS 001640 *****

0011640 01 001640 023440 -----      14      SMIO
0011641 01 001641 003060 -----      15      ZR      R3
0011642 01 001642 002063 000017      16      STM      R3,N(BUFC)(RAO),M(BUFC) # ZERO BUFFER COUNTER
0011644      17      EOW      # 12432
-001- 18      NOTE      ***** THE LAST ADDRESS OVERWRITTEN IS 001643 *****

0011644
0011644 01 001644 037020 111375 CSYSUB -001- 21      CALL      TIMEOUT
0011646 01 001646 000022 ----- MASACS 22      BSA      TIMEOUT
0011647 01 001647 144005 -----      23      DATA      REDKON+1
0011650 01 001650 061203 -----      24      ST      RO,N(TIMKON)(RAO)
0011651 01 001651 051261 -----      25      SBS      N(TIMING)(RAO),S(TIMING)
0011652 01 001652 054062 ----- 0011734 26      TBS      N(RECOV)(RAO),S(RECOV) # IS ERROR RECOVERY INPROGRESS.
0011653 01 001653 061261 -----      27      BC      RECOVIP
0011654 01 001654 051243 -----      28      SBS      N(RECOV)(RAO),S(RECOV) # FLAG RECOVERY STARTED.
0011655 01 001655 054004 ----- 0011661. 29      TBS      N(STORNOT)(RAO),S(STORNOT)
0011656 01 001656 061324 -----      30      BC      RESTRV
0011657 01 001657 003011 -----      31      SBS      N(CONRCV)(RAO),S(CONRCV) # FLAG CONT. READ RECOVERY.
0011660 01 001660 053002 ----- 0011662 32      LN      RO,BACKORD
0011661      33      B      STOSUB
0011661 01 001661 103003 -----      34 RESTRV
0011662      35      LN      RO,FASTSTP
0011662      36 STOSUB
0011662 01 001662 144000 -----      37      ST      RO,N(STATE)(RAO)
0011663 01 001663 053477 ----- 0011362 38      B      BBSCHB

0011664
0011664 01 001664 124055 -----      42 CRCOK
0011665 01 001665 055004 ----- 0011671 43 #      A BLOCK OF DATA HAS BEEN BROUGHT INTO MEMORY BY THE TAPE. NOW
0011666 01 001666 003255 -----      44 # DEPENDING UPON THE APPLICATION THE DATA MUST BE STORED OR UNPACKED AND
      45 # STORED.
      46      TBN      R2,S(E0F)      #IS THIS AN END OF FILE?
      47      BNC      NOEOF
      48      LN      R10,TSTOP
      49 #STOP TAPE READ. END OF FILE.

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0011667 01 001667 037020 013276 0013276 -001- 01 CALL ORDOUT
0011667 01 001667 037020 013276 0013276 -001- 02 BSA ORDOUT
0011671 01 001671 151261 ----- 03 NOEOF
0011672 01 001672 054117 ----- 04 TBS N(RECOV)(RAO),S(RECOV) # WAS A SUCCESSFULL RECOVERY MADE.
0011673 01 001673 040421 ----- 05 BC RECOVCHK
0011674 01 001674 004421 ----- 06 L R1,1(RA1) # GET BLK. ADDRESS.
0011675 01 001675 002021 003777 07 AN R1,1 # ADJUST TO INDICATE HEAD POSITION
0011677 01 001677 051243 ----- 08 STM R1,N(PTPOS)(RAO),M(PTPOS) # STORE IN CONTROL BLOCK.
0011700 01 001700 054016 ----- 09 TBS N(STORNOT)(RAO),S(STORNOT)
0011701 01 001701 151263 ----- 10 BC DONOTSTR
0011701 01 001701 151263 ----- 11 KEEP60
0011702 01 001702 050000 013366 0013366 12 TBS N(SPECSTOR)(RAO),S(SPECSTOR)
0011702 01 001702 050000 013366 0013366 13 BCL SPECUNL # A SPECIAL UNPACK ROUTINE IS REQUIRED FOR
THIS FILE.
0011704 01 001704 040702 ----- 15 L R12,(N(DATA_AREA)+1)(RA1) # SET UP ADDRESS AND LENGTH FOR DATA
XFER.
0011705 01 001705 040723 ----- 17 L R13,(N(DATA_AREA)+2)(RA1)
0011706 01 001706 016414 177760 18 LRM R0,R12,X(FFFD)
0011710 01 001710 010404 ----- 19 RRN R0,4
0011711 01 001711 041424 ----- 20 LA R1,(N(DATA_AREA)+3)(RA1) # ADJUST FOR UNPACK ROUTINE
0011712 01 001712 007316 ----- 21 EXR RAO,RA1
0011713 01 001713 007337 ----- 22 EXR RAO+1,RA1+1
0011714 01 001714 037021 014333 MASACS -001- 23 CALL UNPKWRDS # MOVE DATA TO STORE
0011714 01 001714 037021 014333 MASACS -001- 24 BSA UNPKWRDS
0011716 01 001716 103060 ----- 25 DONOTSTR
0011716 01 001716 103060 ----- 26 ZR R3
0011717 01 001717 072377 ----- 27 GN R15,15
0011720 01 001720 072356 ----- 28 GN R14,14
0011721 01 001721 041401 ----- 29 LA R0,1(RA1) # ADJUST ADDRESS OF TEMP STORE
0011722 01 001722 072314 ----- 30 GN R12,12
0011723 01 001723 072335 ----- 31 GN R13,13
0011724 01 001724 002063 000017 32 STM R3,N(BUFC)(RAO),M(BUFC) # INIT BUFFER COUNT
0011726 01 001726 051243 ----- 33 TBS N(STORNOT)(RAO),S(STORNOT)
0011727 01 001727 055136 ----- 34 BNC DOEOFCK
0011730 01 001730 103461 000007 35 LODEVAL
0011730 01 001730 103461 000007 36 LI R3,EVALPOS
0011732 01 001732 062243 ----- 37 ZBS N(STORNOT)(RAO),S(STORNOT)
0011733 01 001733 053135 ----- 38 B ZRSTATE

0011734 01 001734 151324 ----- 42 RECOVIP
0011734 01 001734 151324 ----- 43 TBS N(CONRCV)(RAO),S(CONRCV) # WAS THIS A CONTINUOUS READ RECOVERY.
0011735 01 001735 054045 ----- 44 BC REQINT # YES
0011736 01 001736 040023 ----- 45 L R1,N(VERT)(RAO) # PREPARE TO VERIFY OR POSITION ON ADJACENT
TRACK
0011737 01 001737 040041 ----- 47 L R2,N(TR)(RAO)
0011740 01 001740 003420 010000 48 AI R1,ES(VERT) # GO TO NEXT TRACK.
0011742 01 001742 002023 030000 49 STM R1,N(VERT)(RAO),M(VERT) # UPDATE VERIFY TRACK.

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0011744 01 001744 017022 030000
 0011746 01 001746 054002 ----- 0011750
 0011747 01 001747 053712 ----- 0011661

01 CRM R1,R2,M(VERT) # HAVE ALL BEEN USED.
 02 BC VERECFAL
 03 B RESTRV

0011750
 0011750 01 001750 151304 -----
 0011751 01 001751 055011 ----- 0011762
 0011752
 0011752 01 001752 103421 140000
 0011754 01 001754 002020 000037

07 VERECFAL
 08 TBS N(ERNO)(RAD),S(ERNO) #HAS ERROR OCCURRED DURING XLATE CHECK
 09 BNC CONFAL
 10 XCHKCLN
 11 LI R1,M(SCHCON1)+M(SCHCON2)
 12 STM R1,N(STATE)(RAD),M(STATE)
 13 OW O(1756) # 13712
 -001- 14 NOTE ***** THE FIRST ADDRESS OVERWRITTEN IS 001756 *****

0011756 01 001756 002023 140017
 0011760

17 STM R1,N(SCHCON1)(RAD),M(SCHCON1)+M(SCHCON2)+M(BUFC)
 18 EOW # 13712
 -001- 19 NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 001757 *****

0011760 01 001760 044024 -----

0011761
 0011761 01 001761 153401 ----- 0011362
 0011762
 0011762 01 001762 103401 000014
 0011764 01 001764 062261 -----
 0011765 01 001765 051361 -----
 0011766 01 001766 055674 ----- 0011662.
 0011767
 0011767 01 001767 103641 040007
 0011771 01 001771 023440 -----
 0011772
 0011772
 0011772 01 001772 037020 111375 CSYSUB
 0011774 01 001774 000003 -----
 0011775 01 001775 144005 -----
 0011776 01 001776 061203 -----
 0011777 01 001777 003401 000020
 0012001 01 002001 053661 ----- 0011662

22 ST R1,N(DESTON)(RAD) #INIT STATE AND SCHEDULER BITS TO INDICATE
 23 #THAT B CAN NOT USE ITS XLATE
 24 NXTSCHB
 25 B BBSCHB
 26 CONFAL
 27 LI RD,VERFALST # PREPARE VERIFY RECOVERY STATE.
 28 ZBS N(RECOV)(RAD),S(RECOV)
 29 TBS N(INTHNR)(RAD),S(INTHNR) # HAS AN UNRECOVERABLE ERROR OCCURRED?
 30 BNC STOSUB
 31 RPCK
 32 LI R10,INIT
 33 SMIO
 34 BGNTIM MSEC=70
 -001- 35 CALL TIMOUT
 -002- 36 BSA TIMOUT
 -001- 37 DATA 3 # TIMOUT+1
 38 ST RD,N(TIMKON)(RAD) #INIT TAPE DEVICE
 39 SBS N(TIMING)(RAD),S(TIMING)
 40 LI RD,PACKINT # SCHEDULE REPACK AND MRF.
 41 B STOSUB

0012002
 0012002 01 002002 151304 -----
 0012003 01 002003 054747 ----- 0011752
 0012004 01 002004 051361 -----
 0012005 01 002005 054762 ----- 0011767

45 REQINT
 46 TBS N(ERNO)(RAD),S(ERNO)
 47 BC XCHKCLN
 48 TBS N(INTHNR)(RAD),S(INTHNR) # HAS MATE UNIT FAILED ALSO?
 49 BC RPCK # YES

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0012006 01 002006 003401 000016      01      LI      RD,CONREFAL      # SET UP CONTINUOUS READ FAILURE.
0012010 01 002010 053652 ----- 0011662 02      B      STOSUB

0012011                                06 RECOVCHK
0012011 01 002011 151243 -----      07 # A RECOVERY ATTEMPT HAS SUCCEEDED. ANALYZE RESULTS.
0012012 01 002012 055003 ----- 0012015 08      TBS      N(STORNOT)(RAO),S(STORNOT)
0012013 01 002013 051324 -----      09      BNC      VERRTN
0012014 01 002014 054702 ----- 0011716 10      TBS      N(CONRCV)(RAO),S(CONRCV) # WAS THIS A CONT. REAP
0012015                                11      BC      DONOTSTR      # READ RECOVERY NO YET DONE.
0012015                                12 VERRTN
0012015 01 002015 140461 -----      13      L      R3,1(RA1)
0012016 01 002016 062261 -----      14      ZBS      N(RECOV)(RAO),S(RECOV)
0012017 01 002017 040121 -----      15      L      R5,N(PTPOS)(RAO) # GET LAST BLOCK READ IN CORRECTLY +1.
0012020 01 002020 006143 -----      16      LR      R6,R3
0012021 01 002021 004541 -----      17      AN      R6,1
0012022 01 002022 002141 003777      18      STM      R6,N(PTPOS)(RAO),M(PTPOS)
0012024 01 002024 051324 -----      19      TBS      N(CONRCV)(RAO),S(CONRCV) # WAS THIS CONT. READ RECOVERY.
0012025 01 002025 055024 ----- 0012051 20      BNC      VERRECHK      # NO
0012026 01 002026 017123 003777      21      CRM      R5,R3,M(PTPOS) # WAS IT A SUCCESSFUL CONTINUOUS READ
                                RECOVERY.
0012030 01 002030 055752 ----- 0012002 23      BNC      REQINT      #TREAT THIS AS A READ CONTINUOUS ERROR
0012031 01 002031 062324 -----      24      ZBS      N(CONRCV)(RAO),S(CONRCV)
0012032 01 002032 051361 -----      25      TBS      N(INTHNR)(RAO),S(INTHNR) # WAS THE OTHER UNIT INVOLVED?
0012033 01 002033 054002 ----- 0012035 26      BC      STOPSW
0012034 01 002034 053645 ----- 0011701 27      B      KEEPGO      # RECOVERY COMPLETE AND SUCCESSFUL.

0012035                                31 STOPSW
0012035 01 002035 103641 040007      32      LI      R10,INIT      # STOP UNIT FOR INTERRUPTED SCHEDULER.
0012037                                33      CALL      ORDOUT
0012037 01 002037 037020 013276 0013276 -001- 34      BSA      ORDOUT
0012041                                35      CALL      TIMOUT
0012041 01 002041 137020 111375 CSYSUB -001- 36      BSA      TIMOUT
0012043 01 002043 000022 ----- MASACS 37      DATA      REDKON+1
0012044 01 002044 144005 -----      38      ST      R0,N(TIMKON)(RAO) # PREPARE TO WAIT FOR HDW. RECOVERY.
0012045 01 002045 061203 -----      39      SBS      N(TIMING)(RAO),S(TIMING)
0012046 01 002046 003401 000017      40      LI      R0,CLEANSW
0012050 01 002050 053612 ----- 0011662 41      B      STOSUB

0012051                                45 VERRECHK
0012051 01 002051 140103 -----      46      L      R4,N(VERT)(RAO)
0012052 01 002052 010537 -----      47      RLN      R5,1
0012053 01 002053 017105 030000      48      CRM      R4,R5,1(VERT) # DOES VERIFY TRACK NEED ADJUSTMENT.
0012055 01 002055 054641 ----- 0011716 49      BC      DONOTSTR

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0012056 01 002056 040104 ----- 01 L R4,N(DESTON)(RAO)
0012057 01 002057 017103 003777 02 CRM R4,R3,M(DESTON) # IS DESTINATION DAMAGED BLOCK?
0012061 01 002061 054667 ----- 03 BC VERECFAL
0012062 01 002062 002123 030000 04 STM R5,N(VERT)(RAO),M(VERT) # ADJUST VERIFY TRACK.
0012064 01 002064 053632 ----- 05 B DONOTSTR

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09 *
10 * A CHECK IS MADE AFTER THE DATA IS STORED TO SEE IF THE 'READON' SUBSTATE
11 * HAS COMPLETED ITS TASK (EOF BIT SET) AND IF THE SCHEDULER SHOULD BE
12 * PLACED INTO ITS HOME OR ZERO SUBSTATE. THIS WILL RESULT IN THE CONTINUED
13 * SEARCH OF THE CHECKSUM RESULT WORK TABLE OR THE IDLING OF THE SCHEDULER.

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0012065 17 DOEOFCK
0012065 01 002065 124055 ----- 18 TBN R2,S(EOF) # CHECK IF WHOLE 4K HAS BEEN ENTERED.
0012066 01 002066 054002 ----- 19 BC ZRSTATE
0012067 01 002067 053407 ----- 20 B STREAD

0012070 22 ZRSTATE
0012070 01 002070 144060 ----- 23 ST R3,N(STATE)(RAO)
0012071 01 002071 040460 ----- 24 L R3,N(BLKADR)(RA1)
0012072 01 002072 004461 ----- 25 AN R3,1 # ADJUST PTP
0012073 01 002073 051264 ----- 26 TBS N(ACTSEQ)(RAO),S(ACTSEQ) #BACKSPACE POSITIONING WAS ACTIVE
27 # CHECK IF DESTINATION SHOULD BE REACHED.
0012074 01 002074 055025 ----- 28 BNC NOACTSEQ
0012075 01 002075 040044 ----- 29 L R2,N(DESTON)(RAO)
0012076 01 002076 062264 ----- 30 ZBS N(ACTSEQ)(RAO),S(ACTSEQ)
0012077 01 002077 017043 003777 31 CRM R2,R3,M(PTPOS) #HAS DESTINATION BEEN REACHED?
0012101 01 002101 054020 ----- 32 BC NOACTSEQ
0012102 01 002102 040023 ----- 33 L R1,N(VERT)(RAO) #BEGIN POSITIONING ERROR RECOVERY.
0012103 01 002103 003420 010000 34 AI R1,ES(VERT)
0012105 01 002105 002023 030000 35 STM R1,N(VERT)(RAO),M(VERT)
0012107 01 002107 040041 ----- 36 L R2,N(TR)(RAO)
0012110 01 002110 017041 030000 37 CRM R2,R1,M(TR) #HAVE ALL TRACKS BEEN USED TO POSITION.
0012112 01 002112 061261 ----- 38 SBS N(RECOV)(RAO),S(RECOV)
0012113 01 002113 054635 ----- 39 BC VERECFAL #TREAT LIKE VERIFY FAILURE.
0012114 01 002114 062261 ----- 40 ZBS N(RECOV)(RAO),S(RECOV)
0012115 01 002115 003461 000006 41 LI R3,REDVERST #RE-VERIFY AND ATTEMPT POSITIONING
0012117 01 002117 044060 ----- 42 ST R3,N(STATE)(RAO)
0012120 01 002120 053007 ----- 43 B SETIMEL

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0012121
0012121 01 002121 102061 003777      01 NOACTSEQ
0012123 01 002123 061123 -----      02      STM      R3,N(PTPOS)(RAO),M(PTPOS)
0012124 01 002124 040021 -----      03      SBS      N(PTPKOWN)(RAO),S(PTPKOWN)
0012125 01 002125 002023 030000      04      L      R1,N(TR)(RAO)
                                05      STM      R1,N(VERT)(RAO),M(VERT) #RE-ESTABLISH VERIFY TRACK IN
                                06 # CASE OF ERROR ON BACKSPACE POSITIONING.
                                07 SETIMEL
0012127      08      BL      SETIME
0012127 01 002127 137000 011420 0011420

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```

12 *
13 * BCKRECV SUBSTATE
14 *
15 * THIS SUBSTATE INITIATES A RECOVERY ATTEMPT ON A BLOCK OF DATA WHICH
16 * HAS FAILED THE CRC CHECK. UPON FAILURE, THE TAPE HAS BEEN STOPPED
17 * AND THIS SUBSTATE REQUESTED. A BACKSPACE WILL BE EXECUTED TO POSITION
18 * THE TAPE AHEAD OF THE BLOCK TO BE RECOVERED. NEXT THE TAPE IS STARTED
19 * TO READ AND NORMAL SCHEDULER SEQUENCING IS CONTINUED.
20 *
21 *
22 * CONTINUED ERROR RECOVERY
23 *
24 * IF THE RE-READ FAILS, THE NEXT PHASE OF ERROR RECOVERY INVOLVES
25 * INVOKING THE USE OF THE MATE TAPE. THE REQUEST IS PLANTED IN
26 * THE SCHEDULER'S CONTROL BLOCK THAT IS USING THE MATE UNIT. WHEN
27 * HONORED, THE BLOCK IN ERROR IS READ OFF OF IT AND THEN CONTROL
28 * IS PASSED BACK TO IT. THE INTERRUPTING SCHEDULER THEN CONTINUES
29 * ON ITS ORIGINAL TAPE. A NUMBER OF SUBSTATES ARE USED IN THIS PROCESS.

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0012131
0012131 01 002131 103401 000012      33 BCKRECV
0012133 01 002133 044000 -----      34      LI      RO,REDRCV
0012134 01 002134 037000 011351 0011351      35      ST      RO,N(STATE)(RAO)
                                36      BL      DOBKUP

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40 *
41 *
42 * ONCE THE 'A' SCHEDULER HAS COMPLETED ITS PRIMARY OBJECTIVE, THE TASK
43 * OF DETERMINING IF THE 'B' AND 'C' SCHEDULERS HAVE BEEN ABLE TO
44 * UNDERTAKE AND COMPLETE THEIR WORK MUST BE STARTED. FIRST THE STATUS OF
45 * THE OTHER TAPE UNIT IS INTERROGATED. IF IT IS MARKED OUT OF SERVICE,
46 * THE 'A' SCHEDULER HAS DETERMINED THAT THE 'B' AND 'C' SCHEDULERS WERE
47 * INOPERATIVE. AT THIS POINT THE 'A' SCHEDULER REWINDS THE TAPE UNIT IT
48 * HAS JUST USED AND CHANGES THE 'B' AND 'C' SCHEDULERS MEMORY SO THAT THEY
49 * CAN UTILIZE THIS WORKING TAPE TO COMPLETE THEIR WORK. THEY 'A' SCHEDULER

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01 * NOW MARKS THE 'B' AND 'C' SCHEDULERS TAPE UNIT INSERVICE WHICH WILL
 02 * AUTOMATICALLY ACTIVATE THEM. ONCE THEY ARE ACTIVE THE 'A' SCHEDULER
 03 * GOES DORMANT JUST AS IT WOULD HAVE IF THE 'B' AND 'C' SCHEDULERS HAD
 04 * NOT RUN INTO DIFFICULTY WITH THEIR TAPE UNIT.

08 *
 09 *
 10 * THE 'B' SCHEDULER IS CHARGED WITH RELOADING THE SYSTEM PARAMETERS
 11 * (TRANSLATION) LOCATED ON TRACK 2 OF THE TAPE (IF ANY EXISTS). IT,
 12 * LIKE THE 'A' SCHEDULER, HAS ITS OWN CHECKSUM TABLE SUBSTATE AND
 13 * UTILIZES THE REMAINING COMMON SUBSTATES TO POSITION, READ AND
 14 * RELOAD MEMORY.

0012136

18 BSCHEDULE

0012136 01	002136	103006	-----	22	LN	RD,6	
0012137 01	002137	034400	013510 0013510	23	STL	RD,NXTSCH	
0012141 01	002141	030740	013557 0013557	24	LL	RA1,TEMPAD	
0012143 01	002143	030760	013560 0013560	25	LL	RA1+1,TEMPAD+1	#SET UP ADDRESS WITHOUT ACCESSING STORE.
0012145 01	002145	072756	-----	26	HN	R14,14	
0012146 01	002146	072777	-----	27	HN	R15,15	
0012147 01	002147	031040	013527 0013527	28	LAL	R2,BSTATE,RAO	# SET UP B SCHEDULER CONTROL BLOCK ADDRESS
0012151 01	002151	072714	-----	29	HN	R12,12	
0012152 01	002152	072735	-----	30	HN	R13,13	
0012153 01	002153	051341	-----	31	TBS	N(INTREQ)(RAO),S(INTREQ)	#HAS INTERRUPTION REQUEST BEEN MADE
0012154 01	002154	055010	----- 0012164	32	BNC	NOCHANCE	
0012155 01	002155	051361	-----	33	TBS	N(INTHNR)(RAO),S(INTHNR)	#HAS INTERRUPTION BEEN ALLOWED?
0012156 01	002156	054603	----- 0011761	34	BC	NXTSCHB	
0012157 01	002157	051163	-----	35	TBS	N(TU00S)(RAO),S(TU00S)	#HAS B SCH. BEEN DELAYED?
0012160 01	002160	055004	----- 0012164	36	BNC	NOCHANCE	
0012161 01	002161	051343	-----	37	TBS	N(SCHCON1)(RAO),S(SCHCON1)	
0012162 01	002162	055002	----- 0012164	38	BNC	NOCHANCE	#NO INT. ALLOWED WHILE XLATE CHECK IS MADE
0012163 01	002163	061361	-----	39	SBS	N(INTHNR)(RAO),S(INTHNR)	#B DELAYED. ALLOW REQUEST.
0012164				40	NOCHANCE		
0012164 01	002164	140222	-----	41	L	R9,N(EA)(RAO)	# SET UP ENABLE ADDRESS.
0012165 01	002165	051203	-----	42	TBS	N(TIMING)(RAO),S(TIMING)	# CHECK IF SUBSTATE IS TIMING.
0012166 01	002166	055040	----- 0012226	43	BNC	PAXOFF	
0012167 01	002167	040005	-----	44	L	RD,N(TIMKON)(RAO)	
0012170				45	CALL	TIMCHKALT	# CHECK IF TIMEOUT DONE.
0012170 01	002170	037020	013403 0013403 -001-	46	BSA	TIMCHKALT	
0012172 01	002172	154265	----- 0012457	47	BC	CSCHEDUL	
0012173 01	002173	062203	-----	48	ZBS	N(TIMING)(RAO),S(TIMING)	
				49			# THIS SEGMENT OF CODE WILL EXAMINE THE CHECKSUM FILE

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0012174 01 002174 051343 -----	01 # SO THAT IT CAN BE DETERMINED IF THE XLATE ON THIS TAPE
0012175 01 002175 054031 ----- 0012226	02 # IS GOOD.
0012176 01 002176 051304 -----	03 TBS N(SCHCON1)(RAO),S(SCHCON1) #HAS INTERROGATION BEEN COMPLETED?
0012177 01 002177 054027 ----- 0012226	04 BC PAXOFF
0012200 01 002200 061304 -----	05 TBS N(ERNO)(RAO),S(ERNO) #IS INTERROGATION ACTIVE?
0012201 01 002201 030400 013511 0013511	06 BC PAXOFF
0012203 01 002203 014000 -----	07 SBS N(ERNO)(RAO),S(ERNO) #FLAG INTERROGATION OF CHKSUM FILE ACTIVE
0012204 01 002204 054006 ----- 0012212	08 LL RO,MATEOOS
0012205	09 TZ RO #SHOULD CHECK BE MADE
0012205 01 002205 162304 -----	10 BC UNITOK #YES
0012206 01 002206 061343 -----	11 DONSET
0012207 01 002207 003000 -----	12 ZBS N(ERNO)(RAO),S(ERNO)
0012210 01 002210 044000 -----	13 SBS N(SCHCON1)(RAO),S(SCHCON1) #MATE IS OOS - USE THIS XLATE
0012211 01 002211 053072 ----- 0012303	14 ZR RO
0012212	15 ST RO,N(STATE)(RAO) #CLEAR STATE IN CASE OF MATE TAPE REMOVAL
0012212 01 002212 130400 013520 0013520	16 B CHECKTBLOFF #DURING CHECK OF XLATE
0012214 01 002214 024007 -----	17 UNITOK
0012215 01 002215 054770 ----- 0012205	18 LL RO,ASTATE+N(STATE)
0012216 01 002216 030420 013500 0013500	19 TBN RO,S(TUOOS) #HAS A SCH. XLATE BEEN MAKED UNSEABLE?
0012220 01 002220 003420 000000 MASACS	20 BC DONSET #YES
0012222 01 002222 002024 003777	21 LL R1,BASEGENR
0012224 01 002224 037000 011426 0011426	22 SI R1,BLKPERCK-1
	23 STM R1,N(DESTON)(RAO),M(DESTON) #PREPARE TO RETRIEVE 1ST CHECKSUM BLK
	24 BL VERIT
0012226	28 PAXOFF
0012226 01 002226 110457 -----	29 RLN R2,1
0012227 01 002227 056002 -----	30 BPAX R2
0012230 01 002230 137000 012303 0012303	31 BL CHECKTBLOFF
0012232	32 XFASTPOS
0012232 01 002232 137000 011363 0011363	33 BL FASTPOS
0012234	34 XSLWPOS
0012234 01 002234 137000 011274 0011274	35 BL SLOWPOS
0012236	36 XFSTOPTST
0012236 01 002236 137000 011411 0011411	37 BL FSTOPTST
0012240	38 XVERIT
0012240 01 002240 137000 011426 0011426	39 BL VERIT
0012242	40 XSCANSTP
0012242 01 002242 137000 011441 0011441	41 BL SCANSTP
0012244	42 XREDVER
0012244 01 002244 137000 011451 0011451	43 BL REDVER
0012246	44 XREEVAL
0012246 01 002246 137000 011506 0011506	45 BL REEVAL
0012250	46 XREADON
0012250 01 002250 137000 011546 0011546	47 BL READON
0012252	48 XBCKRECV1
0012252 01 002252 137000 011161 0011161	49 BL BCKRECV1

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0012254
 0012254 01 002254 137000 011322 0011322
 0012256
 0012256 01 002256 137000 011512 0011512
 0012260
 0012260 01 002260 137000 011123 0011123
 0012262 01 002262 137000 012273 0012273
 0012264 01 002264 137000 012423 0012423
 0012266 01 002266 137000 012731 0012731
 0012270 01 002270 137000 012741 0012741
 0012272 01 002272 153000 ----- 0012272

01 XSTREAD1
 02 BL STREAD1
 03 XCHKTIM
 04 BL CHKTIM
 05 XAVERREC
 06 BL AVERREC
 07 BL BVERCONT
 08 BL BREDCON
 09 BL BSCHCLN
 10 BL REPKMRF
 11 B *

0012273
 0012273 01 002273 130400 013523 0013523
 0012275 01 002275 024006 -----
 0012276 01 002276 055274 ----- 0012572
 0012277 01 002277 030620 013522 0013522
 0012301 01 002301 044222 -----
 0012302 01 002302 053730 ----- 0012232

15 BVERCONT
 16 LL RO,ASTATE+N(STUS)
 17 TBN RO,S(STUS) # CAN A SCHEDULER TAPE BE USED YET.
 18 BNC LONGSCHED #WAIT
 19 LL R9,ASTATE+N(EA)
 20 ST R9,N(EA)(RAO)
 21 B XFASTPOS

25 *
 26 *
 27 * THE 'B' SCHEDULER'S 'CHECKTBLOFF' SUBSTATE IS ITS HOME OR ZERO SUBSTATE.
 28 * IT FIRST CHECKS IF THE 'B' SCHEDULER HAS COMPLETED ITS WORK. IF NOT,
 29 * IT CHECKS IF IT IS OPERATIVE. IN OTHER WORDS, IS ITS TAPE UNIT IN SERVICE.
 30 * IF IT HAS AN OPERATIVE UNIT, IT CHECKS IF SUFFICIENT TIME HAS ELAPSED
 31 * TO ALLOW ANY PREVIOUS TAPE MOTION TO SETTLE DOWN. IF SO IT BEGINS ITS
 32 * TABLE SEARCHES AND DATA RELOAD ROUTINES SIMILAR TO THE 'A' SCHEDULER.

0012303
 0012303 01 002303 151341 -----
 0012304 01 002304 055003 ----- 0012307
 0012305 01 002305 061361 -----
 0012306 01 002306 053151 ----- 0012457
 0012307
 0012307 01 002307 151143 -----
 0012310 01 002310 054147 ----- 0012457
 0012311 01 002311 051163 -----
 0012312 01 002312 054145 ----- 0012457
 0012313 01 002313 051223 -----
 0012314 01 002314 054012 ----- 0012326
 0012315 01 002315 061223 -----
 0012316 01 002316 061203 -----

36 CHECKTBLOFF
 37 TBS N(INTREQ)(RAO),S(INTREQ) #HAS AN INTERRUPTION REQ. BEEN MADE
 38 BNC CONTINUB
 39 SBS N(INTHNR)(RAO),S(INTHNR) #ALLOW INT.
 40 B CSCHEDUL
 41 CONTINUB
 42 TBS N(STUS)(RAO),S(STUS) # CHECK IF B SCHEDULER DONE.
 43 BC CSCHEDUL
 44 TBS N(TU00S)(RAO),S(TU00S) # CHECK IF B SCHEDULER IS INOPERATIVE
 45 BC CSCHEDUL
 46 TBS N(BSBOT)(RAO),S(BSBOT) # CHECK IF TAPE HAS BEEN STABILIZED.
 47 BC SETTRK
 48 SBS N(BSBOT)(RAO),S(BSBOT) # FLAG TAPE IN POSITION TO READ.
 49 SBS N(TIMING)(RAO),S(TIMING)

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0012317 01 002317 037020 111375 CSYSUB -001- 01 CALL TIMEOUT
0012321 01 002321 000022 ----- MASACS 02 BSA TIMEOUT
0012322 01 002322 144005 ----- 03 DATA REDKON+1
0012323 01 002323 061301 ----- 04 ST R0,N(TIMKON)(RA0) # REQUEST A TIME DELAY BEFORE CONTINUING
0012324 01 002324 061303 ----- 05 SBS N(TR)(RA0),S(TR) # SET UP FOR TRACK 2 READS.
0012325 01 002325 053132 ----- 06 SBS N(VERT)(RA0),S(VERT) # SET UP VERIFY TRACK.
0012326 01 002326 103421 020000 07 B CSCHEDUL
0012330 01 002330 002021 030000 09 SETTRK
0012332 01 002332 002023 030000 10 LI R1,2*ES(TR) # PREPARE TO READ TRACK 3 XLATE.
11 STM R1,N(TR)(RA0),M(TR)
12 STM R1,N(VERT)(RA0),M(VERT)

0012334 16 CHECKIT
0012334 01 002334 131400 013561 0003561 17 # READY TO RELOAD IF NEEDED. SEARCH CHECKSUM TABLE.
0012336 01 002336 041405 ----- 18 LAL R0,CHKSUM,RA1 #SET CHKSUM ADDRESS.
0012337 01 002337 030420 013554 0013554 19 LA R0,S(RA1) #WORK TABLE.
0012341 01 002341 030460 013556 0013556 20 LL R1,BLKINCOF # LOGICAL INDEX INTO TAPE FILE
0012343 01 002343 030440 013507 0013507 21 LL R3,BLKDIGOFF # WORK TABLE INDEX
0012345 01 002345 136040 012351 0012351 22 LL R2,BXKONOFF # NUMBER OF 4K SEG. ON TRK 2
0012347 01 002347 061143 ----- 23 DOLOOK
0012350 01 002350 053107 ----- 0012457 24 BX R2,VERSUM # IF ANY CHECKSUM RESULTS LEFT, DO LOOKUP
25 SBS N(STUS)(RA0),S(STUS) # FLAG B SCHEDULER DONE.
26 B CSCHEDUL

0012351 30 VERSUM
0012351 01 002351 142403 ----- 31 LX R0,R3(RA1) # GET WORK TABLE ENTRY.
0012352 01 002352 004461 ----- 32 AN R3,1
0012353 01 002353 034460 013556 0013556 33 STL R3,BLKDIGOFF # INCREMENT AND STORE WORK TABLE INDEX
0012355 01 002355 024017 ----- 34 TBN R0,S(TSFLG)
0012356 01 002356 054767 ----- 0012345 35 BC DOLOOK
0012357 01 002357 003420 000005 MASACS 36 AI R1,BLK4K # ADD TO TAPE FILE INDEX BLOCKS PER 4K.
0012361 01 002361 024016 ----- 37 TBN R0,S(FORCOPY)
0012362 01 002362 055703 ----- 0012345 38 BNC DOLOOK # NOTHING WRONG WITH THIS 4K BLOCK.

0012363 01 002363 034420 013554 0013554 42 # A BLOCK OF XLATE MUST BE LOADED. INITIATE LOOKUP.
0012365 01 002365 034440 013507 0013507 43 STL R1,BLKINCOF # STORE LOGICAL TAPE INDEX AWAY.
0012367 01 002367 044024 ----- 44 STL R2,BXKONOFF # STORE BX CONSTANT
0012370 01 002370 051123 ----- 45 ST R1,N(DESTON)(RA0) # SET UP DESTINATION OF BAD 4K BLK.
46 TBS N(PTPKNOWN)(RA0),S(PTPKNOWN) # IS VERIFICATION OF POSITION
REQUIRED.
0012371 01 002371 050400 011451 0011451 48 BNCL REDVER # YES
0012373 01 002373 037000 011506 0011506 49 BL REEVAL

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0012375

0012375 01 002375 130400 013511 0013511
 0012377 01 002377 014000 -----
 0012400 01 002400 050400 011767 0011767
 0012402 01 002402 031400 013530 0013530
 0012404 01 002404 061740 -----
 0012405 01 002405 024017 -----
 0012406 01 002406 050400 011146 0011146
 0012410 01 002410 044226 -----
 0012411 01 002411 030620 013531 0013531
 0012413 -----
 0012413 01 002413 144222 -----
 0012414 01 002414 061361 -----
 0012415 01 002415 040021 -----
 0012416 01 002416 002024 003777
 0012420 01 002420 072356 -----
 0012421 01 002421 072377 -----
 0012422 01 002422 053616 ----- 0012240

04 AREDCON

05 # A SCHEDULER CONTINUOUS READ RECOVERY ROUTINE.

06 LL RO,MATEOOS
 07 TZ RO # HAS AN UNRECOVERABLE ERROR OCCURRED.
 08 BNCL RPCK
 09 LAL RO,BSTATE+N(INTHNR),RA1
 10 SBS O(RA1),S(INTREQ) # MAKE INTERRUPTION REQUEST
 11 TBN RO,S(INTHNR) # HAS B ALLOWED INTERRUPTION?
 12 BNCL NEXTSCHED
 13 ST R9,N(EASV)(RAO) # SAVE ORIGINAL EA.
 14 LL R9,BSTATE+N(EA)
 15 GOFIN
 16 ST R9,N(EA)(RAO) # ESTABLISH NEW EA.
 17 SBS N(INTHNR)(RAO),S(INTHNR) # FLAG USE OF OTHER UNIT FOR RECOVERY.
 18 L R1,N(PTPOS)(RAO)
 19 STM R1,N(DESTON)(RAO),M(PTPOS) # ESTABLISH NEW DESTINATION
 20 GN RA1,RA1
 21 GN RA1+1,RA1+1
 22 B XVERIT

0012423

0012423 01 002423 130400 013511 0013511
 0012425 01 002425 014000 -----
 0012426 01 002426 050400 011767 0011767
 0012430 01 002430 030620 013522 0013522
 0012432 01 002432 030400 013521 0013521
 0012434 01 002434 024017 -----
 0012435 01 002435 054006 ----- 0012443
 0012436 01 002436 030620 013540 0013540
 0012440 01 002440 030400 013537 0013537
 0012442 01 002442 055004 ----- 0012446
 0012443 -----
 0012443 01 002443 140202 -----
 0012444 01 002444 044206 -----
 0012445 01 002445 053746 ----- 0012413

26 BREDCON

27 # B SCHEDULER CONTINUOUS READ RECOVERY ROUTINE.

28 LL RO,MATEOOS
 29 TZ RO # IF MATE IS OOS REPACK AND MRF.
 30 BNCL RPCK
 31 LL R9,ASTATE+N(EA)
 32 LL RO,ASTATE+N(INTHNR)
 33 TBN RO,S(INTHNR) # HAS A SCHEDULER HONORED REQUEST.
 34 BC REQUGO
 35 LL R9,CSTATE+N(EA)
 36 LL RO,CSTATE+N(INTHNR) # HAS C SCHEDULER HONORED REQUEST?
 37 BNC MAKERQ
 38 REQUGO
 39 L R8,N(EA)(RAO)
 40 ST R8,N(EASV)(RAO) # SAVE OLD EA.
 41 B GOFIN

0012446

0012446 01 002446 131400 013520 0013520
 0012450 01 002450 051543 -----
 0012451 01 002451 055003 ----- 0012454

45 MAKERQ

46 # MAKE REQUEST TO NEXT SCHEDULER ABLE TO HELP.

47 LAL RO,ASTATE,RA1
 48 TBS N(STUS)(RA1),S(STUS) # IS A SCHEDULER DONE?
 49 BNC MAKEIT

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CIPL W77D

0012452,01 002452 031400 013536 0013536
0012454

01	LAL	RO,CSTATE,RA1
02	MAKEIT	
03	CIPL	OW 0(2454) # 13712
-001- 04	NOTE	***** THE FIRST ADDRESS OVERWRITTEN IS 002454 *****

0012454 01 002454 061741 -----
0012455

07	DDELETE NOTE	1
08	SBS	N(INTREQ)(RA1),S(INTREQ) #MAKE REQUEST TO A OR C SCHEDULAR
09	EOW	# 13712
-001- 10	NOTE	***** THE LAST ADDRESS OVERWRITTEN IS 002454 *****

0012455 01 002455 037000 011146 0011146

13	BL	NEXTSCHED
----	----	-----------

20 *
21 *
22 * THE 'C' SCHEDULER BECOMES ACTIVE WHEN THE 'B' SCHEDULER HAS TERMINATED
23 * ITS WORK AND HAS GONE DORMANT. THE 'C' SCHEDULER IS RESPONSIBLE FOR
24 * OVER WRITING THE NOW RELOADED STORE WITH PATCHES LOCATED IN THE
25 * PATCH FILE JUST BEYOND THE LAST BLOCK OF THE SYSTEM PARAMETERS.
26 * IT WILL RELOAD EVERY CURRENT PATCH AND ALL PATCH AREAS FOR BOTH
27 * RESIDENT AND PAGED PROGRAMS. THE MECHANICS OF THIS SCHEDULER ARE
28 * SIMILAR TO THE 'A' AND 'B' SCHEDULERS EXCEPT THAT THERE IS NO EXACT
29 * COPY OF THE DATA BLOCK FROM THE TEMPORARY I/O BUFFER TO MEMORY. SPECIAL
30 * UNPACKING IS DONE TO EXTRACT THE PATCHES SINCE MORE THAN JUST THE
31 * OVERWRITES EXIST IN THE PATCH FILES.
32 *
33 *
34 * THE 'C' SCHEDULER WILL PASS CONTROL TO AN APPLICATION PROGRAM AT THIS
35 * POINT TO CHECK IF ANY SPECIFIC APPLICATION TAPE MANIPULATION IS REQUIRED.
36 * AS LONG AS THE APPLICATION CODE RETURNS WITH AN ACTIVE STATUS, THE
37 * 'C' SCHEDULER WILL CONTINUE THE LOOP. AN INACTIVE STATUS WILL BEGIN THE
38 * TERMINATION OF BOOTSTRAP.

0012457

0012457 01	002457 103000	-----
0012460 01	002460 034400	013510 0013510
0012462 01	002462 031440	045265 LAYOUT
0012464 01	002464 072756	-----
0012465 01	002465 072777	-----
0012466 01	002466 031040	013536 0013536
0012470 01	002470 072714	-----

42	CSCHEDUL	
43	ZR	RO
44	STL	RO,NXTSCH
45	LAL	R2,I_OBUF-1,RA1
46	HN	R14,14
47	HN	R15,15
48	LAL	R2,CSTATE,RAO
49	HN	R12,12

SET UP C SCHEDULER CONTROL BLOCK ADDRESS

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0012471 01 002471 072735 -----	01	HN	R13,13	
0012472 01 002472 051341 -----	02	TBS	N(INTRQ)(RAO),S(INTRQ) #CHECK FOR INT. REQ.	
0012473 01 002473 055003 ----- 0012476	03	BNC	CONTINC	
0012474 01 002474 051361 -----	04	TBS	N(INTHNR)(RAO),S(INTHNR) #HAS IT BEEN ALLOWED?	
0012475 01 002475 055021 ----- 0012516	05	BNC	OUT	
0012476	06	CONTINC		
0012476 01 002476 140222 -----	07	L	R9,N(EA)(RAO)	
0012477 01 002477 014231 -----	08	TZ	R9	# HAS C SCHEDULER BEEN STARTED.
0012500 01 002500 055025 ----- 0012525	09	BNC	CSTARTED	
0012501 01 002501 030600 013522 0013522	10	LL	R8,EAON	#GET A AND B SCHEDULERS ENABLE ADDRESSES.
0012503 01 002503 030620 013531 0013531	11	LL	R9,EAOFF	
0012505 01 002505 030400 013523 0013523	12	LL	RO,STATON	
0012507 01 002507 024006 -----	13	TBN	RO,S(STUS)	#IS THE A SCHEDULER DONE.
0012510 01 002510 055006 ----- 0012516	14	BNC	OUT	
0012511 01 002511 030400 013532 0013532	15	LL	RO,STATOFF	
0012513 01 002513 020211 -----	16	CR	R8,R9	#HAS THE A & B SCHEDULERS USED SAME TAPE
0012514 01 002514 055005 ----- 0012521	17	BNC	BCK	
0012515 01 002515 024006 -----	18	TBN	RO,S(STUS)	# IS B SCHEDULER DONE.
0012516	19	OUT		
0012516 01 002516 150400 010774 0010774	20	BNCL	BOOTLOOP	
0012520 01 002520 053004 ----- 0012524	21	B	GETEAIN	
0012521	22	BCK		
0012521 01 002521 124006 -----	23	TBN	RO,S(STUS)	# IS B SCHEDULER DONE.
0012522 01 002522 054002 ----- 0012524	24	BC	GETEAIN	
0012523 01 002523 006230 -----	25	LR	R9,R8	
0012524	26	GETEAIN		
0012524 01 002524 144222 -----	27	ST	R9,N(EA)(RAO)	#SET UP C SCHEDULERS EA ADDRESS
0012525	28	CSTARTED		
0012525 01 002525 151203 -----	29	TBS	N(TIMING)(RAO),S(TIMING) # CHECK SUBSTATE TIMING	
0012526 01 002526 055007 ----- 0012535	30	BNC	PAXC	
0012527 01 002527 040005 -----	31	L	RO,N(TIMKON)(RAO)	
0012530	32	CALL	TIMCHKALT	# SEE IF REQUIRED TIME HAS ELAPSED.
0012530 01 002530 037020 013403 0013403 -001-	33	BSA	TIMCHKALT	
0012532 01 002532 150000 010774 0010774	34	BCL	BOOTLOOP	
0012534 01 002534 062203 -----	35	ZBS	N(TIMING)(RAO),S(TIMING)	
0012535	36	PAXC		
0012535 01 002535 156002 -----	37	BPAX	R2	
0012536 01 002536 153022 ----- 0012560	38	B	CMON	
0012537 01 002537 153473 ----- 0012232	39	B	XFASTPOS	
0012540 01 002540 153474 ----- 0012234	40	B	XSLOWPOS	
0012541 01 002541 153475 ----- 0012236	41	B	XFSTOPTST	
0012542 01 002542 153476 ----- 0012240	42	B	XVERIT	
0012543 01 002543 153477 ----- 0012242	43	B	XSCANSTP	
0012544 01 002544 153500 ----- 0012244	44	B	XREDVER	
0012545 01 002545 153501 ----- 0012246	45	B	XREEVAL	
0012546 01 002546 153502 ----- 0012250	46	B	XREADON	
0012547 01 002547 153503 ----- 0012252	47	B	XBCKREC1	
0012550 01 002550 153504 ----- 0012254	48	B	XSTREAD1	
0012551 01 002551 153505 ----- 0012256	49	B	XCHKTIM	

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0012552 01 002552 153506 ----- 0012260
 0012553 01 002553 153033 ----- 0012606
 0012554 01 002554 153051 ----- 0012625
 0012555 01 002555 153102 ----- 0012657
 0012556 01 002556 153163 ----- 0012741
 0012557 01 002557 153000 ----- 0012557

01 B XAVERREC
 02 B CVERCONT
 03 B CREDCON
 04 B ASCHCLN
 05 B REPKMRF
 06 B *

0012560
 0012560 01 002560 161263 -----
 0012561 01 002561 051123 -----
 0012562 01 002562 050400 011451 0011451
 0012564 01 002564 040021 -----
 0012565 01 002565 002024 003777
 0012567 01 002567 051341 -----
 0012570 01 002570 055004 ----- 0012574
 0012571 01 002571 061361 -----
 0012572
 0012572 01 002572 137000 011146 0011146
 0012574
 0012574 01 002574 130400 013532 0013532
 0012576 01 002576 022007 -----
 0012577 01 002577 034400 013532 0013532
 0012601 01 002601 024006 -----
 0012602 01 002602 050400 010774 0010774
 0012604 01 002604 037001 016326 MASACS

08 CMON
 09 SBS N(SPECSTOR)(RAO),S(SPECSTOR)
 10 TBS N(PTPKOWN)(RAO),S(PTPKOWN) # HAS FILE BEEN LOCATED???
 11 BNCL REDVER # SHOULD BE IN GAP OR AT BOT.
 12 L R1,N(PTPOS)(RAO)
 13 STM R1,N(DESTON)(RAO),M(PTPOS)
 14 TBS N(INTREQ)(RAO),S(INTREQ) #IS AN INTERRUPT REQ. PENDING
 15 BNC LOOKATB
 16 SBS N(INTHNR)(RAO),S(INTHNR) #ALLOW INTERRUPT
 17 LONGSCHED
 18 BL NEXTSCHED
 19 LOOKATB
 20 LL RO,STATOFF # IF B SCHEDULER DONE, TERMINATE BOOTSTRAP.
 21 ZBN RO,S(TU00S) #START B IF IT WAS WAITING ON C.
 22 STL RO,STATOFF
 23 TBN RO,S(STUS)
 24 BNCL BOOTLOOP
 25 BL APPTRL

0012606
 0012606 01 002606 130400 013532 0013532
 0012610 01 002610 024006 -----
 0012611 01 002611 055705 ----- 0012516
 0012612 01 002612 030600 013531 0013531
 0012614 01 002614 020211 -----
 0012615 01 002615 054005 ----- 0012622
 0012616 01 002616 006230 -----
 0012617
 0012617 01 002617 144222 -----
 0012620 01 002620 037000 011411 0011411
 0012622
 0012622 01 002622 130620 013522 0013522
 0012624 01 002624 053773 ----- 0012617

29 CVERCONT
 30 LL RO,BSTATE+N(STUS)
 31 TBN RO,S(STUS) # IS B SCHEDULER DONE?
 32 BNC OUT # MUST HAVE USED A SCHEDULERS TAPE
 33 LL R8,BSTATE+N(EA)
 34 CR R8,R9 # DID C USE B SCHEDULERS TAPE
 35 BC GETAEA
 36 LR R9,R8 # USE B SCHEDULERS TAPE
 37 STREA
 38 ST R9,N(EA)(RAO)
 39 BL FSTOPTST # CONTINUE RELOAD.
 40 GETAEA
 41 LL R9,N(EA)+ASTATE # USE A SCHEDULERS TAPE.
 42 B STREA

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CIPL W77D

0012625
 0012625 01 002625 130400 013511 0013511
 0012627 01 002627 014000 -----
 0012630 01 002630 050400 011767 0011767
 0012632 01 002632 031400 013527 0013527
 0012634 01 002634 051543 -----
 0012635 01 002635 050400 011146 0011146
 0012637 01 002637 040602 -----
 0012640 01 002640 020211 -----
 0012641 01 002641 055003 ----- 0012644
 0012642 01 002642 030600 013522 0013522
 0012644
 0012644 01 002644 144226 -----
 0012645 01 002645 006230 -----
 0012646 01 002646 053545 ----- 0012413
 0012647

01 CREDCON
 02 # THE C SCHEDULER'S READ CONTINUOUS ERROR RECOVERY.
 03 LL RO,MATE00S
 04 TZ RO # CAN RECOVERY TAKE PLACE.
 05 BNCL RPCK # NO
 06 LAL RD,BSTATE,RA1
 07 TBS N(STUS)(RA1),S(STUS)
 08 BNCL NEXTSCHED
 09 L R8,N(EA)(RA1)
 10 CR R8,R9 # IS B AND C EA'S SAME?
 11 BNC USEBUSE
 12 LL R8,ASTATE+N(EA) # US A SCHEDULERS TAPE.
 13 USEBUSE
 14 ST R9,N(EASV)(RAD) # SAVE OLD EA.
 15 LR R9,R8
 16 B GOFIN
 17 APPTLR

21 *
 22 *
 23 * THE COMPLETION OF THE APPLICATION SEGMENT WILL BE FOLLOWED BY THE FINAL
 24 * TASK OF THE 'C' SCHEDULER. IT WILL SCAN THE 'A' SCHEDULER'S CONTROL
 25 * BLOCK TO CHECK IF IT HAS TERMINATED ITS WORK. WHEN ALL THREE SCHEDULERS
 26 * HAVE TERMINATED THEIR WORK, THE 'C' SCHEDULER WILL PASS CONTROL
 27 * TO THE INITIALIZATION PROGRAM FOR CONTINUED RESORATION OF THE CONTROL
 28 * UNITS. THIS FINISHES THE REQUIRED WORK OF THE BOOTSTRAP PROGRAM
 29 * AND IT WILL BE CLEARED OUT OF MEMORY BY THE STANDARD INITIALIZATION OF
 30 * STORE BY THE INIT. PROGRAMS.
 31 HEADER

0012647
 0012647 01 002647 137020 013373 0013373 -001- 35 CALL OFLBOOTTST
 0012651 01 002651 150400 005166 CINIT 36 BSA OFLBOOTTST
 0012653 01 002653 003002 ----- 37 BNCL BOOTRTN
 0012654 01 002654 034400 013476 0013476 38 LN RD,2
 0012656 01 002656 056540 ----- 39 STL RD,OFLBOOTSW
 40 HALT # OFFLINE BOOT DONE

0012657
 0012657 01 002657 131020 013530 0013530 44 ASCHCLN
 0012661 45 # A AND C SCH'S CONTINUOUS READ RECOVERY ROUTINE.
 0012661 01 002661 103422 033777 46 LAL R1,N(PTPOS)+BSTATE,RAD
 0012663 01 002663 044020 ----- 47 CONTCLEAN
 48 NI R1,M(TR)+M(PTPOS)
 49 ST R1,O(RAD) #RESET ALL RECOVERY BITS

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CIPL W77D

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0012664 01 002664 062122 ----- 01 ZBS (N(PTPKNOWN)-N(PTPOS))(RAO),S(PTPKNOWN)
0012665 01 002665 072314 ----- 02 GN RAO,RAO
0012666 01 002666 072335 ----- 03 GN RAO+1,RAO+1
0012667 01 002667 040026 ----- 04 L R1,N(EASV)(RAO)
0012670 01 002670 044022 ----- 05 ST R1,N(EA)(RAO) #RESTORE SAVED EA.
0012671 01 002671 062123 ----- 06 ZBS N(PTPKNOWN)(RAO),S(PTPKNOWN)
0012672 01 002672 040421 ----- 07 L R1,1(RA1) #GET PRESENT BLK ADDRESS
0012673 01 002673 004421 ----- 08 AN R1,1 #ADD TO SHOW POSITION OF HEADS.
0012674 01 002674 002024 003777 09 STM R1,N(DESTON)(RAO),M(DESTON) #ESTABLISH NEW DESTINATION.
0012676 01 002676 051263 ----- 10 TBS N(SPECSTOR)(RAO),S(SPECSTOR) #IS SPECIAL UNLOAD REQUIRED.
0012677 01 002677 050000 013366 0013366 11 BCL SPECUNL
0012701 01 002701 040702 ----- 12 L R12,(N(DATA_AREA)+1)(RA1) #SET UP ADDRESS FOR STORAGE OF DATA
0012702 01 002702 040723 ----- 13 L R13,(N(DATA_AREA)+2)(RA1)
0012703 01 002703 016414 177760 14 LRM R0,R12,MSK(12,4)
0012705 01 002705 010404 ----- 15 RRN R0,4 #SET UP LENGTH FOR UNLOAD.
0012706 01 002706 041424 ----- 16 LA R1,(N(DATA_AREA)+3)(RA1) #ADJUST FOR UNPACK ROUTINE.
0012707 01 002707 007316 ----- 17 EXR RAO,RA1
0012710 01 002710 007337 ----- 18 EXR RAO+1,RA1+1
0012711 ----- 19 CALL UNPKWRDS #MOVE DATA TO STOPE
0012711 01 002711 037021 014333 MASACS -001- 20 BSA UNPKWRDS
0012713 ----- 21 RECOVUNL
0012713 01 002713 172314 ----- 22 GN RAO,RAO
0012714 01 002714 072356 ----- 23 GN RA1,RA1
0012715 01 002715 072335 ----- 24 GN RAO+1,RAO+1
0012716 01 002716 072377 ----- 25 GN RA1+1,RA1+1
0012717 01 002717 003060 ----- 26 ZR R3
0012720 01 002720 002063 000017 27 STM R3,N(BUFC)(RAO),M(BUFC) #CLEAR BUFFER COUNT.
0012722 01 002722 044060 ----- 28 ST R3,N(STATE)(RAO)
0012723 01 002723 062361 ----- 29 ZBS N(INTHNR)(RAO),S(INTHNR) #CLEAR INT. BIT
0012724 01 002724 051721 ----- 30 TBS (N(EOF)+1)(RA1),S(EOF)
0012725 01 002725 050000 011146 0011146 31 BCL NEXTSCHED
-001- 32 CIPL OW 0(2727) # 13712
-001- 33 NOTE ***** THE FIRST ADDRESS OVERWRITTEN IS 002727 *****

0012727 01 002727 037000 013462 0013462 -001- 36 CIPL BGNP 0(3462) # 13712
-001- 37 BL XXX429
-001- 38 NOTE CIPL 'CSECT'
-001- 39 NOTE ***** PATCH AREA BEGINS AT 003462 *****

0013462 -001- 42 XXX429 PATCHAREA
0013462 01 003462 140222 ----- 43 L R9,N(EA)(RAO)
44 DEPATCH NOTE CHANGE BCL TO BC
0013463 01 003463 050000 012767 0012767 45 BCL NXBL
0013465 01 003465 037000 011426 0011426 46 BL VERIT
0013467 ----- 47 ENDP # 13712
0013467 01 003467 037000 012731 0012731 -001- 48 BL XXX431
-001- 49 NOTE ***** LAST PATCH ADDRESS USED IS 003470 *****

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CIPL W77D

-001- 01 NOTE ***** NUMBER OF PATCH WORDS USED IS 7 (DECIMAL) *****

0012731
0012731

-001- 04 XXX431 OMCONTINUE

05 EOW # 13712

-001- 06 NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 002730 *****

0012731

0012731 01 002731 131000 013520 0013520

0012733 01 002733 051341 -----

0012734 01 002734 054003 ----- 0012737

0012735 01 002735 031000 013536 0013536

0012737

0012737 01 002737 141021 -----

0012740 01 002740 053721 ----- 0012661

12 BSCHCLN

13 # B SCH. FINAL CLEAN UP AFTER CONTINUOUS READ RECOVERY

14 LAL RO,ASTATE,RAO

15 TBS N(INTREQ)(RAO),S(INTREQ) #WAS A SCH. TAPE USED?

16 BC WASASCH

17 LAL RO,CSTATE,RAO #C SCH. WAS USED.

18 WASASCH

19 LA R1,N(PTPOS)(RAO)

20 B CONTCLEAN

0012741

0012741 01 002741 103641 002415

0012743 01 002743 003621 016320

0012745 01 002745 023440 -----

0012746 01 002746 003621 016340

0012750 01 002750 023440 -----

0012751

0012751

0012751 01 002751 037020 111375 CSYSUB

0012753 01 002753 003101 -----

0012754 01 002754 144005 -----

0012755 01 002755 061203 -----

0012756 01 002756 003401 000021

0012760 01 002760 044000 -----

0012761 01 002761 003401 052525

0012763 01 002763 034400 013513 0013513

0012765 01 002765 034400 013514 0013514

24 REPKMRF

25 # AN UNRECOVERABLE ERROR EXISTS ON BOTH UNITS. ATTEMPT REPACK AND MRF.

26 LI R10,TFF #SEND FAST FORWARD

27 LI R9,TUOADR

28 SMIO

29 LI R9,TU1ADR

30 SMIO

31 BGNTIM SEC=40

-001- 32 CALL TIMOUT

-002- 33 BSA TIMOUT

-001- 34 DATA 1601 # TIMOUT+1

35 ST RO,N(TIMKON)(RAO)

36 SBS N(TIMING)(RAO),S(TIMING)

37 LI RO,KILLSYS #NEXT STATE IS KILL SYSTEM

38 ST RO,N(STATE)(RAO)

39 LI RO,0(252525)

40 STL RO,PATTERN1 #START KILL PATERN IN DB

41 STL RO,PATTERN2

42 CIPL OW 0(2767) # 13712

-001- 43 NOTE ***** THE FIRST ADDRESS OVERWRITTEN IS 002767 *****

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CIPL W77D

0012767 01 002767 137000 011146 0011146
001277101 NXBL BL
02 EOM
-001- 03 NOTE

NEXTSCHED

13712

***** THE LAST ADDRESS OVERWRITTEN IS 002770 *****

12 # THE PATCH FILE IS BEING READ IN. THIS ROUTINE IS RESPONSIBLE FOR UNPACKING
13 # THE DATA AND STORING IT INTO MEMORY. ANY WIDTH STORE IS ACCEPTIBLE.

```

0012771 15 PATCHUNL
0012771 01 002771 151344 ----- 16 TBS N(EOPF)(RAD),S(EOPF) #WAS PATCH FILE COMPLETED.
0012772 01 002772 054100 ----- 17 BC BTODON
0012773 01 002773 003421 001474 MASACS 18 LI R1,0BUFLN # BUFFER WRDS USED BY PATCH FILE PER BLOCK
0012775 01 002775 072356 ----- 19 GN R14,14
0012776 01 002776 072377 ----- 20 GN R15,15 # RESTORE ADDRESS OF IO BUFFER.
0012777 01 002777 041401 ----- 21 LA RD,1(RA1) # ADJUST TO
0013000 01 003000 051343 ----- 22 TBS N(SCHCON1)(RAD),S(SCHCON1) # WAS FILE HEADER PROCESSED
0013001 01 003001 054007 ----- 23 BC YESDONE
0013002 01 003002 040401 ----- 24 L RD,N(DATA_AREA)(RA1) # GET FIRST HEADER WORD.
0013003 01 003003 014000 ----- 25 TZ RD #IS PATCH FILE USED?
0013004 01 003004 054066 ----- 26 BC BTODON
0013005 01 003005 061343 ----- 27 SBS N(SCHCON1)(RAD),S(SCHCON1) # FLAG HEADER DONE
0013006 01 003006 004024 ----- 28 SN R1,N(PATLENGTH) # SUBTRACT HEADER LENGTH FROM COUNTER.
0013007 01 003007 041414 ----- 29 LA RD,N(PATLENGTH)(RA1) # ADJUST RA REGISTER.
0013010 30 YESDONE
0013010 01 003010 151103 ----- 31 TBS N(CARYBIT)(RAD),S(CARYBIT) # IS A PATCH CROSSING A BLOCK BOUNDRY
0013011 01 003011 054104 ----- 32 BC CARRYO
0013012 33 OVWRT
0013012 01 003012 140461 ----- 34 L R3,1(RA1) # SET UP THE TOTAL LENGTH OF THE PATCH.
0013013 01 003013 014063 ----- 35 TZ R3
0013014 01 003014 054056 ----- 36 BC BTODON # ZERO LENGTH NO MORE PATCHES IN THIS BLOCK.
0013015 01 003015 003465 177777 37 CI R3,0(177777) # CHECK FOR END OF PATCH DATA,
0013017 01 003017 055003 ----- 38 BNC MRPAT
0013020 01 003020 061344 ----- 39 SBS N(EOPF)(RAD),S(EOPF) #FLAG IGNORE FURTHER DATA.
0013021 01 003021 053051 ----- 40 B BTODON
0013022 41 MRPAT
0013022 01 003022 140406 ----- 42 L RD,N(OWSTAT)-N(PATLENGTH)+1(RA1) # CHECK PATCH STATUS. 1 MEANS
LOAD.
0013023 01 003023 017400 001401 44 CIRM RD,1,S(OWSTAT),M(OWSTAT)/ES(OWSTAT)
0013025 01 003025 055126 ----- 45 BNC PROCNA # PROCESS NON-ACTIVE PATCH.
0013026 01 003026 004075 ----- 46 SN R3,3 # ADJUST WORD COUNTS FOR BOUNDRY CHECKS.
0013027 01 003027 004035 ----- 47 SN R1,3
0013030 01 003030 014021 ----- 48 TZ R1 # HAS END OF BLOCK BEEN REACHED.
0013031 01 003031 055005 ----- 49 BNC NXTBOUND

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0013032 01 003032 003023 -----	01	LN	R1,3	
0013033 01 003033 034420 013552 0013552	02	STL	R1,SKIPWRD	
0013035 01 003035 053132 ----- 0013167	03	B	NXTBLKIN	
0013036	04	NXTBOUND		
0013036 01 003036 141406 -----	05	LA	RO,(N(WRDLNGTH)-N(PATLENGTH))(RA1)	
0013037 01 003037 004035 -----	06	SN	R1,3	# ADJUST WORD COUNTS FOR BOUNDARY CHECK.
0013040 01 003040 004075 -----	07	SN	R3,3	
0013041 01 003041 014021 -----	08	TZ	R1	# HAS A BLOCK BEEN EXHAUSTED.
0013042 01 003042 054125 ----- 0013167	09	BC	NXTBLKIN	
0013043	10	NXTSEG		
0013043 01 003043 140402 -----	11	L	RO,2(RA1)	
0013044 01 003044 003402 177760	12	NI	RO,M(SEGNO)	# IS THIS PART OF THE PATCH RESIDENT? SEGNO=0
0013046 01 003046 055123 ----- 0013171	13	BNC	NONRES	
0013047 01 003047 040501 -----	14	L	R4,1(RA1)	# OBTAIN LENGTH OF PATCH
0013050 01 003050 040702 -----	15	L	RA0,2(RA1)	
0013051 01 003051 041723 -----	16	LA	RA0+1,3(RA1)	# SET UP ADDRESS OF PATCHED DATA
0013052	17	ADJUST		
0013052 01 003052 104075 -----	18	SN	R3,3	# ADJUST COUNTERS FOR LENGTH AND ADDRESS DATA.
0013053 01 003053 004035 -----	20	SN	R1,3	
0013054 01 003054 014021 -----	21	TZ	R1	# HAS BLOCK AREA BEEN EXHAUSTED.
0013055 01 003055 055021 ----- 0013076	22	BNC	STORPAT	
0013056 01 003056 034700 013550 0013550	23	STL	RA0,PATADR	# SAVE PATCHED ADDRESS.
0013060 01 003060 034720 013551 0013551	24	STL	RA0+1,PATADR+1	
0013062 01 003062 072314 -----	25	GN	RA0,RA0	# RESTORE CONTROL BUFFER ADDRESS.
0013063 01 003063 072335 -----	26	GN	RA0+1,RA0+1	
0013064	27	SAVEINFO		
0013064 01 003064 134460 013546 0013546	28	STL	R3,PATOTLEN	# SAVE THE COUNTERS.
0013066 01 003066 034500 013547 0013547	29	STL	R4,PATESSWD	
0013070 01 003070 061103 -----	30	SBS	N(CARYBIT)(RA0),S(CARYBIT)	# SET PATCH CARRY OVER BIT
0013071 01 003071 061363 -----	31	SBS	N(SCHCON2)(RA0),S(SCHCON2)	# SET PATCH ACTIVE BIT.
0013072	32	BTODON		
0013072 01 003072 151361 -----	33	TBS	N(INTHNR)(RA0),S(INTHNR)	# IS THIS RECOVERY UNLOAD?
0013073 01 003073 054620 ----- 0012713	34	BC	RECOVUNL	# YES. SPECIAL CLEAN UP REQUIRED.
0013074 01 003074 037000 011716 0011716	35	BL	DONOTSTR	
0013076	39	STORPAT		
0013076 01 003076 136100 013105 0013105	40	BX	R4,LODSTR	# LOAD STORE UNTIL OUT OF PATCH INFORMATION.
0013100 01 003100 072314 -----	41	GN	RA0,RA0	# RESTORE CONTROL BLOCK ADDRESS.
0013101 01 003101 072335 -----	42	GN	RA0+1,RA0+1	
0013102	43	CR3K		
0013102 01 003102 114063 -----	44	TZ	R3	# HAS THE ENTIRE PATCH BEEN PROCESSED.
0013103 01 003103 054707 ----- 0013012	45	BC	OVWRT	# YES GET NEXT PATCH
0013104 01 003104 053737 ----- 0013043	46	B	NXTSEG	# NO. PROCESS NEXT SEGMENT OF PATCH.

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0013105				01	LODSTR				
0013105	01	003105	140521	-----	02	L	R5,1(RA1)	# GET LOW 16 BITS OF NEW DATA IN PATCH	
0013106	01	003106	041542	-----	03	LA	R6,2(RA1)	# GET HIGH 8 BITS OF PATCH (IF APPLICABLE).	
0013107					04	MIMODE	L SDR1,R6		
0013107	01	003107	013000	-----	-001- 05	MIS	0		
0013110	01	003110	162143	-----	-002- 06	VFD	8,SDR1XT 8,R6XF		
0013111	01	003111	044120	-----	07	ST	R5,0(RA0)	# STORE PATCH DATA	
0013112	01	003112	041401	-----	08	LA	RD,1(RA1)	# ADJUST PATCH ADDRESS FOR NEXT STORE	
0013113	01	003113	041001	-----	09	LA	RD,1(RA0)	# ADJUST BUFFER POINTER FOR NEXT RETRIEVAL.	
0013114	01	003114	051736	-----	10	B	ADJUST		
								0013052	
0013115					14	CARRYO			
0013115	01	003115	130400	013552	0013552	15	LL	RD,SKIPWRD	# PART OF AN INACTIVE PATCH MAY HAVE TO BE SKIPPED.
0013117	01	003117	005020	-----	17	SR	R1,RO	# CHECK HOW MUCH OF NEW BLK MUST BE SKIPPED	
0013120	01	003120	054006	-----	18	BC	PSTV	# NUMBER OF WORDS TO SKIP ARE LESS C? EQUAL TO UNPROCESSED BLOCK.	
0013121	01	003121	015421	-----	20	COM	R1		
0013122	01	003122	004421	-----	21	AN	R1,1	# POSITIVE DIFFERENCE NOW IN R1	
0013123					22	EQLTO			
0013123	01	003123	134420	013552	0013552	23	STL	R1,SKIPWRD	# STORE SKIP FACTOR IN CONTROL WORD
0013125	01	003125	053745	-----	24	B	BTODON		
0013126					28	PSTV			
0013126	01	003126	114021	-----	29	TZ	R1	# IS R1=RO	
0013127	01	003127	054774	-----	30	BC	EQLTO		
0013130	01	003130	030460	013546	0013546	31	LL	R3,PATOTLEN	# RESTORE TOTAL LENGTH.
0013132	01	003132	043520	-----	32	LAX	R5,RO(RA1)	# ADJUST RA1 PER SKIP WORD.	
0013133	01	003133	003120	-----	33	ZR	R5		
0013134	01	003134	034520	013552	0013552	34	STL	R5,SKIPWRD	# CLEAR SKIP WORD.
0013136	01	003136	002123	100020		35	STM	R5,N(SCHCON2)(RA0),M(CARYBIT)+M(SCHCON2)	
0013140	01	003140	024017	-----	36	TBN	RD,S(SCHCON2)	# WAS THE PATCH ACTIVE?	
0013141	01	003141	055651	-----	37	BNC	OVWRT	# PROCESS THE	
0013142	01	003142	030500	013547	0013547	38	LL	R4,PATESSWD	# RESTORE LENGTH OF PATCH.
0013144	01	003144	014104	-----	39	TZ	R4	# WAS THIS A BOUNDARY BREAK AT A POINT IN PATCH HDR.	
0013145	01	003145	054735	-----	41	BC	CR3K	# YES	
0013146	01	003146	030700	013550	0013550	42	LL	RA0,PATADR	# RESTORE PATCH ADDRESS.
0013150	01	003150	030720	013551	0013551	43	LL	RA0+1,PATADR+1	
0013152	01	003152	053724	-----	44	B	STORPAT	# CONTINUE LOAD	

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0013153			01 PROCNA			
0013153	01	003153 105023 -----	02	3R	R1,R3	# CHECK IF PATCH IS GREATER OR EQUAL TO REMAINING BLOCK.
0013154	01	003154 054007 -----	04	BC	ZRT	
0013155	01	003155 015421 -----	05	COM	R1	
0013156	01	003156 004421 -----	06	AN	R1,1	# R1 NOW CONTAINS POSITIVE REMAINDER.
0013157			07	STEXT		
0013157	01	003157 134420 013546 0013546	08	STL	R1,PATOTLEN	# SAVE FOR NEXT BLOCK
0013161	01	003161 061103 -----	09	SBS	N(CARYBIT)(RAO),S(CARYBIT)	# FLAG CARRY-OVER PROCESSING.
0013162	01	003162 053741 -----	10	B	EGLTO	
0013163			14	ZRT		
0013163	01	003163 114021 -----	15	TZ	R1	# CHECK IF REMAINING BLK. LENGTH IS ZERO
0013164	01	003164 054773 -----	16	BC	STEXT	# YES. GET NEXT BLK.
0013165	01	003165 043403 -----	17	LAX	RO,R3(RA1)	# ADJUST RA TO NEXT PATCH.
0013166	01	003166 053624 -----	18	B	OVWRT	
0013167			22	NXTBLKIN		
0013167	01	003167 103100 -----	23	ZR	R4	
0013170	01	003170 053674 -----	24	B	SAVEINFO	
0013171			28	NONRES		
0013171	01	003171 140521 -----	29	L	R5,1(RA1)	# GET THE NUMBER OF ESS WORD PAIRS IN PATCH
0013172	01	003172 006005 -----	30	LR	RO,R5	
0013173	01	003173 010537 -----	31	RLN	R5,1	# MULTIPLY BY TWO
0013174	01	003174 001520 -----	32	AR	R5,RO	# COMPLETE MULTIPLICATION BY 3
0013175	01	003175 004523 -----	33	AN	R5,3	#ADJUST FOR WORD LENGTH AND ADDRESS FIELDS
0013176	01	003176 006141 -----	34	LR	R6,R1	# SAVE FOR FUTURE SUBTRACTION.
0013177	01	003177 005025 -----	35	SR	R1,R5	# SEE IF IT IS GREATER THAN REMAINING BLK. OR EQUAL TO.
0013200	01	003200 055010 -----	37	BNC	MUSTCRY	# MUST CARRY CALCULATION ACROSS BLOCK BOUNDRY
0013201	01	003201 014021 -----	39	TZ	R1	#IS IT EQUAL TO REMAINING BLOCK.
0013202	01	003202 054006 -----	40	BC	MUSTCRY	# YES
0013203	01	003203 005065 -----	41	SR	R3,R5	#ADJUST REMAINING TOTAL PATCH COUNT.
0013204	01	003204 043405 -----	42	LAX	RO,R5(RA1)	#ADJUST BUFFER POINTER.
0013205	01	003205 014063 -----	43	TZ	R3	#IS ANY PATCH LEFT
0013206	01	003206 054604 -----	44	BC	OVWRT	#NO
0013207	01	003207 053634 -----	45	B	NXTSEG	

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E01

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CIPL W77D

0013210
 0013210 01 003210 120065 -----
 0013211 01 003211 054007 ----- 0013220
 0013212 01 003212 005065 -----

01 MUSTCRY
 02 CR
 03 BC
 04 SR

R3,R5
 IGNORNXT
 R3,R5

#CHECK IF ANY MORE PATCH REMAINS AFTER SKIP
 # NO
 # SOME PATCH REMAINS. JUST SKIP A SEGMENT OF
 THE PATCH.

0013213 01 003213 005126 -----
 0013214 01 003214 034520 013552 0013552
 0013216 01 003216 003100 -----
 0013217 01 003217 053645 ----- 0013064

06 SR
 07 STL
 08 ZR
 09 B

R5,R6
 R5,SKIPWRD
 R4
 SAVEINFO

0013220
 0013220 01 003220 105066 -----
 0013221 01 003221 034460 013552 0013552
 0013223 01 003223 061103 -----
 0013224 01 003224 003000 -----
 0013225 01 003225 034400 013546 0013546
 0013227 01 003227 053643 ----- 0013072

13 IGNORNXT
 14 SR
 15 STL
 16 SBS
 17 ZR
 18 STL
 19 B

R3,R6
 R3,SKIPWRD
 N(CARYBIT)(RAO),S(CARYBIT) #SET CARRY OVER BIT.
 RO
 RO,PATOTLEN
 BTODON

#REMAINING PATCH IS TO BE SKIPPED.

CLEAR TOTAL PATCH LENGTH.

0013230

23 CONSGEN

24 # ROUTINE WHICH WILL GENERATE A TIME CONSTANT FOR FAST SEARCH
 25 # INTERVAL AND DETERMINE IF A FAST OR SLOW SEARCH IS REQUIRED.
 26 # RO IS THE TAPE DESTINATION AND R1 IS THE PRESENT TAPE POSITION.
 27 # RETURN 1 INDICATES FAST SEARCH AND RETURN 2 IS A SLOW SEARCH.

0013230
 0013230 01 003230 171420 -----
 0013231 01 003231 003120 -----
 0013232 01 003232 040004 -----
 0013233 01 003233 003402 003777
 0013235 01 003235 040021 -----

31 BEGIN
 -002- 32 HA
 33 ZR
 34 L
 35 NI
 36 L
 37 CIPL OW
 -001- 38 NOTE

R5
 RO,N(DESTON)(RAO)
 RO,M(PTPOS)
 R1,N(PTPOS)(RAO)
 O(3236)

13712

***** THE FIRST ADDRESS OVERWRITTEN IS 003236 *****

0013236 01 003236 003422 003776
 0013240

41 NI
 42 EOW
 -001- 43 NOTE

R1,M(PTPOS)-1

#CORRECTS SEARCH ALGORITHM FOR BOT

13712

***** THE LAST ADDRESS OVERWRITTEN IS 003237 *****

*

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CIPL W77D

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0013240 01 003240 055003 ----- 0013243 01 BNC SUBIT
0013241 01 003241 003521 000031 02 LI R5,25 # NEEDED FOR BOT TIMING PROBLEM.
0013243 03 SUBIT
0013243 01 003243 105001 ----- 04 SR R0,R1 # GET DISTANCE TO DESTINATION
0013244 01 003244 054003 ----- 05 BC POSITIVE
0013245 01 003245 015400 ----- 06 COM R0 # CONVERT TO POSITIVE NUMBER.
0013246 01 003246 004401 ----- 07 AN R0,1
0013247 08 POSITIVE
0013247 01 003247 106040 ----- 09 LR R2,R0
0013250 01 003250 003400 177774 MASACS 10 SI R0,FSTDIST # CHECK IF A FAST SEARCH IS NEEDED
0013252 01 003252 054002 ----- 013254 11 BC FAST # NUMBER IS POSITIVE, FAST SEARCH IS
# REQUIRED.
0013253 13 RETURN 2
0013253 01 003253 056442 ----- -001- 14 BTSAGN 2

0013254 16 FAST
0013254 01 003254 103020 ----- 17 # R2 CONTAINS THE DELTA TO DESTINATION.
0013255 01 003255 136040 013260 0013260 18 ZR R1
0013257 01 003257 053004 ----- 013263 19 ADBX BX R2,ADD
20 B DIVIDE
0013260 21 ADD
0013260 01 003260 103420 000155 MASACS 22 AI R1,MSECPR # ADD MSEC PER BLK
0013262 01 003262 053773 ----- 013255 23 B ADBX
0013263 24 DIVIDE
0013263 01 003263 103401 000031 25 LI R0,25 # DIVISOR
0013265 26 ADIV
0013265 01 003265 104441 ----- 27 AN R2,1 # NUMBER OF 25 MSEC CHUNKS NEEDED.
0013266 01 003266 005020 ----- 28 SR R1,R0
0013267 01 003267 054776 ----- 013265 29 BC ADIV # POSITIVE, KEEP SUB.
0013270 01 003270 006005 ----- 30 LR R0,R5
0013271 01 003271 001402 ----- 31 AR R0,R2
0013272 32 CALL TIMOUTX
0013272 01 003272 037020 111373 CSYSUB -001- 33 BSA TIMOUTX
0013274 01 003274 144005 ----- 34 ST R0,N(TIMKON)(RAD)
0013275 35 RETURN 1
0013275 01 003275 056441 ----- -001- 36 BTSAGN 1

0013276 40 ORDOUT
0013276 41 #ROUTINE TO SEND SMIO AND TEST FOR RESPONSE.
0013276 42 BEGIN ( )
0013276 01 003276 123440 ----- 43 SMIO
0013277 01 003277 003013 ----- 44 LN R0,11
0013300 45 MEME
0013300 01 003300 136000 013300 0013300 46 BX R0,MEME #TIME FOR RESPONSE
0013302 01 003302 023500 ----- 47 TIO
0013303 01 003303 055002 ----- 013305 48 BNC SCHLOOK #SEE IF OTHER TAPE CAN BE USED.
0013304 49 RETURN 0 #ALL SEEMS WELL RETURN

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0013304 01 003304 056460 -----	-001- 01	BTSAN	U	
0013305	02	SCHLOOK		
0013305 01 003305 130400 013511 0013511	03	LL	RO,MATEOOS	
0013307 01 003307 014000 -----	04	TZ	RO	#IS OTHER UNIT OOS.
0013310 01 003310 055000 ----- 0013310	05	BNC	*	#YES TIME OUT.
0013311 01 003311 037040 013511 0013511	06	A1S	MATEOOS	#FLAG DIFFICULTY WITH THIS UNIT.
0013313 01 003313 044000 -----	07	ST	RO,N(STATE)(RAO)	#PREPARE THIS SCHEDULER FOR RESTART.
0013314 01 003314 030400 013510 0013510	08	LL	RO,NXTSCH	
0013316 01 003316 003405 000006	09	CI	RO,6	#ONLY B AND C SCHED. CAN BE RESTARTED.
0013320 01 003320 054024 ----- 0013344	10	BC	BSTRBL	#B SCHED. IN TROUBLE.
0013321 01 003321 014000 -----	11	TZ	RO	
0013322 01 003322 055000 ----- 0013322	12	BNC	*	
	13	# C SCHED. IN	TOUBLE	
0013323 01 003323 044002 -----	14	ST	RO,N(EA)(RAO)	#INIT EA WORD IN CNTRL. BLOCK.
0013324 01 003324 051261 -----	15	TBS	N(RECOV)(RAO),S(RECOV)	#IS RECOVERY ALREADY IP.
0013325 01 003325 054000 ----- 0013325	16	BC	*	
0013326 01 003326 030400 013522 0013522	17	LL	RO,EAON	
0013330 01 003330 020011 -----	18	CR	RO,R9	#IS TDC THE SAME AS A SCHED. USED.
0013331 01 003331 006220 -----	19	LR	R9,RO	
0013332 01 003332 055003 ----- 0013335	20	BNC	STR9	#NO SET UP A SCHED. TDC FOR FUTURE USE.
0013333 01 003333 030620 013531 0013531	21	LL	R9,EAOFF	#SET UP B SCHED TAPE
0013335	22	STR9		
0013335 01 003335 134620 013522 0013522	23	STL	R9,EAON	#STORE HERE TO FAKE OUT C SCHED. MONITOR STATE.
	25	LAL	RO,NEXTSCHED,RAO	
0013337 01 003337 031000 011146 0011146	26	HG		
0013341	27	HN	R12,0	
0013341 01 003341 172700 -----	28	HN	R13,1	#SETUP RETURN TO SCHED. RESTART CODE.
0013342 01 003342 072721 -----	29	RETURN		
0013343	30	BTSAN		
0013343 01 003343 056400 -----	-001- 30			
0013344	31	BSTRBL		
0013344 01 003344 162223 -----	32	ZBS	N(BSBOT)(RAO),S(BSBOT)	#PREPARE TO RESTART B SCHED.
0013345 01 003345 051261 -----	33	TBS	N(RECOV)(RAO),S(RECOV)	#HAS RECOVERY BEEN IP
0013346 01 003346 054000 ----- 0013346	34	BC	*	
0013347 01 003347 030400 013522 0013522	35	L	RO,EAON	
0013351 01 003351 044002 -----	36	ST	RO,N(EA)(RAO)	
0013352 01 003352 030400 013540 0013540	37	LL	RO,CEA	#CHECK IF C SCHED STARTED.
0013354 01 003354 014000 -----	38	TZ	RO	
0013355 01 003355 055005 ----- 0013362	39	BNC	SBLK	#BLOCK B START
0013356 01 003356 030400 013523 0013523	40	LL	RO,STATON	
0013360 01 003360 024006 -----	41	TBN	RO,S(STUS)	
0013361 01 003361 054002 ----- 0013363	42	BC	RTNBSCH	#IF A SCHED DONE DO NOT DELAY B RESTART.
0013362	43	SBLK		
0013362 01 003362 161163 -----	44	SBS	N(TUOOS)(RAO),S(TUOOS)	
0013363	45	RTNBSCH		
0013363 01 003363 131000 010754 0010754	46	LAL	RO,BSCHWORK,RAO	
0013365 01 003365 053754 ----- 0013341	47	B	HG	

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CIPL W770

0013366 ,
0013366 01 003366 130740 013516 0013516
0013370 01 003370 030760 013517 0013517
0013372 01 003372 052420 -----

01 SPECUNL

02 LL

03 LL

04 BR

R14,UNLSPEC

R15,UNLSPEC+1

O(RA1)

GET READY FOR SPECIAL UNLOAD ROUTINE.

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CIPL W77D

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0013373      01 # DESCRIPTION
0013373      02 # THIS SUBROUTINE TESTS FOR THE OFFLINE BOOTSTRAP CONDITION
0013373      03
0013373      04 # ENTRY
0013373      05 # OFLBOOTTST
0013373      06
0013373      07 # INPUTS
0013373      08 # NONE
0013373      09
0013373      10 # OUTPUTS
0013373      11 # RO = RETURN CODE
0013373      12 # 0 - OFFLINE BOOTSTRAP (CF = 1)
0013373      13 # -0 - NORMAL BOOTSTRAP (CF = 0)

0013373      15 OFLBOOTTST
0013373      16 BEGIN
0013373 01 003373 171420 ----- -002- 17 HA
0013374 01 003374 030400 013476 0013476 18 LL RO,OFLBOOTSW # READ OFFLINE BOOT SWITCH WORD
0013376 01 003376 003404 006453 19 XI RO,OFLBOOTCON # COMPARE TO OFFLINE BOOT CONSTANT
0013400 01 003400 003402 007777 20 NI RO,M(OFLBTW) # COMPARE LOW BITS ONLY
0013402 21 RETURN
0013402 01 003402 056420 ----- -001- 22 BTSAG

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CIPL W77D

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0013403      01 # DESCRIPTION
0013403      02 # IF THE OFFLINE BOOTSTRAP IS IN PROGRESS, ADJUST RO BEFORE CALLING 'TIMCHK'.
0013403      03
0013403      04 # ENTRY
0013403      05 # TIMCHKALT
0013403      06
0013403      07 # INPUTS
0013403      08 # RO = NORMAL TIMING CONSTANT
0013403      09
0013403      10 # OUTPUTS
0013403      11 # RO = RETURN CODE
0013403      12 # 0 - NO TIMEOUT (CF = 1)
0013403      13 # -0 - TIMEOUT (CF = 0)

0013403      15 TIMCHKALT
0013403      16 BEGIN      ( )
0013403 01 003403 106020 ----- 17 LR      R1,RO      # SAVE RO
0013404      18 CALL      OFLBOOTTST      # DESTROYS RO
0013404 01 003404 037020 013373 0013373 -001- 19 BSA      OFLBOOTTST
0013406 01 003406 106001 ----- 20 LR      RO,R1
0013407 01 003407 055010 ----- 0013417 21 BNC      TIMCHKGO
0013410 01 003410 003421 026000 BLMMA 22 # OFFLINE BOOT IN PROGRESS - ADJUST TIMEOUT CONSTANT
0013412 01 003412 010430 ----- 23 LI      R1,PTRESET
0013413 01 003413 003423 177400 24 RRN      R1,8
0013415 01 003415 001401 ----- 25 OI      R1,MSK(8,8)
0013416 01 003416 004405 ----- 26 AR      RO,R1      # COMPENSATE FOR PT PRESET FACTOR
0013417      27 AN      RO,5      # COMPENSATE FOR INFREQUENT UPDATING
0013417      28 TIMCHKGO
0013417      29 CHKTIM
0013417      30 CALL      TIMCHK      # HAS TIMEOUT OCCURRED?
0013417 01 003417 137020 111364 CSYSUB -001- 31 BSA      TIMCHK
0013421      32 RETURN
0013421 01 003421 156400 ----- -001- 33 BTSA

```

COMMON INITIAL PROGRAM LOADER

PR-1C953-50

0:21:11 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CIPL ISSUE 05 PAGE 70

D02

0:21:11 2/06/81 ****

CIPL W77D

0013422
0013422

01 BOOTPATCH
02 BSS 44

COMMON INITIAL PROGRAM LOADER

PR-1C953-50

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0:21:11 2/06/81 ****

CIPL W770

0013476 -001- 01 OFLBOOTSW LAYOUT 1,CLASS=PERBLK
 02 OFLBOOTSW
 03 OFLBTSM ITEM 12,VAL=0 # NORMAL/OFFLINE BOOTSTRAP SWITCH
 04 ITEM 3 # NOT USED
 05 ALLMAS ITEM 1,VAL=0 # FULL MEMORY RELOAD CONTROL
 06 LOEND

OFLBOOTSW
 001ALLMAS -003- 07 #

NOT USED										OFLBTSM									
NORMAL/OFFLINE BOOTSTRAP SWITCH																			
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0				

0013476 01 003476 000000 -003- 13 VFD 1,0 3, 12,0

0013477 01 003477 000000 -003- 15 HASHSAVE DATA 0 # SAVED HASHSUM VALUE
 0013500 16 BASEGENR
 0013500 01 003500 000000 -003- 17 VFD 0
 0013501 18 BASEXLAT
 0013501 01 003501 000000 -003- 19 VFD 0
 0013502 20 LST4K1
 0013502 01 003502 000000 -003- 21 VFD 0
 0013503 22 BASEPAT
 0013503 01 003503 000000 -003- 23 VFD 0
 0013504 24 GEN4KNO
 0013504 01 003504 000000 -003- 25 VFD 0
 0013505 26 XLAT4KNO
 0013505 01 003505 000000 -003- 27 VFD 0
 0013506 28 BXKONON VFD 0
 0013507 01 003507 000000 -003- 29 BXKONOFF VFD 0

0013510 01 003510 177777 -003- 33 NXTSCH VFD 16,-1
 0013511 01 003511 000000 -003- 34 MATE00S VFD 0

0013512 01 003512 000600 -003- 38 # DO NOT SEPARATE NEXT 4 WORDS.
 0013513 01 003513 000400 -003- 39 PATTERN VFD 16,X(180)
 0013514 01 003514 000200 -003- 40 PATTERN1 VFD 16,X(100)
 0013515 01 003515 000620 000000 -003- 41 PATTERN2 VFD 16,X(80)
 42 COUNT VFD 16,400

0013516 44 UNLSPEC
 0013516 01 003516 000000 012771 0012771 45 ADDR PATCHUNL

COMMON INITIAL PROGRAM LOADER

PR-1C953-50

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0:21:11 2/06/81 ****

CIPL W77D

0013520		01 ASTATE	
0013520 01 003520 000000 -----	02	VFD	0
0013521	03	PTPON	
0013521 01 003521 000000 -----	04	VFD	0
0013522	05	EAON	
0013522 01 003522 000000 -----	06	VFD	0
0013523	07	STATON	
0013523 01 003523 000000 -----	08	VFD	0
0013524	09	ONDEST	
0013524 01 003524 000000 -----	10	VFD	0
0013525 01 003525 000000 -----	11	TIMEON VFD	0
0013526	12	EASVON	
0013526 01 003526 000000 -----	13	VFD	0
0013527	17	BSTATE	
0013527 01 003527 000000 -----	18	VFD	0
0013530	19	PTPOFF	
0013530 01 003530 000000 -----	20	VFD	0
0013531	21	EAOFF	
0013531 01 003531 000000 -----	22	VFD	0
0013532	23	STATOFF	
0013532 01 003532 000000 -----	24	VFD	0
0013533	25	DESTOFF	
0013533 01 003533 000000 -----	26	VFD	0
0013534 01 003534 000000 -----	27	TIMEOFF VFD	0
0013535	28	EASVOF	
0013535 01 003535 000000 -----	29	VFD	0
0013536	33	CSTATE	
0013536 01 003536 000000 -----	34	VFD	0
0013537	35	CPTP	
0013537 01 003537 000000 -----	36	VFD	0
0013540	37	CEA	
0013540 01 003540 000000 -----	38	VFD	0
0013541	39	CSTAT	
0013541 01 003541 000000 -----	40	VFD	0
0013542	41	CDEST	
0013542 01 003542 000000 -----	42	VFD	0
0013543	43	CTIME	
0013543 01 003543 000000 -----	44	VFD	0
0013544	45	EASVC	
0013544 01 003544 000000 -----	46	VFD	0

COMMON INITIAL PROGRAM LOADER

PR-1C953-50

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0:21:11 2/06/81 ****

CIPL W77D

```

0013545
0013545 01 003545 000000 -----
0013546
0013546 01 003546 000000 -----
0013547
0013547 01 003547 000000 -----
0013550
0013550 01 003550 000000 -----
0013551 01 003551 000000 -----
0013552
0013552 01 003552 000000 -----
0013553 01 003553 177773 ----- MASACS
0013554 01 003554 177774 ----- MASACS

0013555 01 003555 177777 -----
0013556 01 003556 177777 000000
0013557
0013557 01 003557 000000 023777 077777
0013557

-001- 21
01 SSPSV
02 VFD 0
03 PATOTLEN
04 VFD 0
05 PATESSWD
06 VFD 0
07 PATADR
08 VFD 0
09 VFD 0
10 SKIPWRD
11 VFD 0
12 BLKINCON VFD 16,-BLK4K
13 BLKINCOF VFD 16,1-BLK4K
14 DINSERT NOTE 'BLKDIGON VFD 16,-1
15 DDELETE NOTE 1
16 BLKDIGON DATA -1
17 BLKDIGOFF VFD 16,-1
18 TEMPAD
19 ADDR TEMPI01-1
20 EOW # 11428
21 NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 003560 *****
    *

0013557
0024000
0024000
28 CHKSUM
29 TEMPI01 CSECT
30 TSD 1
-001- 31
-001- 32 # THE CONTENTS OF THIS BLOCK WILL BE ZEROED AT INITIALIZATION LEVEL 1.

34 CIPL MAXSIZE 0,3561
35 TEMPI01 MAXSIZE 0,1

```

COMMON INITIAL PROGRAM LOADER

PR-1C953-50

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PATCH HISTORY

0:21:11 2/06/81 ****

LISTING OF INDIVIDUAL PATCHES

CIPL W77D

```

                **/**/**/011428/**/**/**
0024000        -002- 01      PBEGIN  PROG=CIPL      TRNO=11428  SERN0B=62873
                  02 # CHANGE OUT-OF-RANGE SHORT BRANCH TO A LONG BRANCH TO ALLOW THE
                  03 # BOOTSTRAP PROGRAM TO FUNCTION.
                  04      TCEND
-001- 05      NOTE *****

                **/**/**/012432/**/**/**
0024000        -002- 12      PBEGIN  PROG=CIPL      TRNO=12432  SERN0B=61983
                  13 # INITIALIZE HASHSUM VALUE BETWEEN GENERIC & TRNSLN BOUNDARIES DURING BOOTSTRAP
                  14 # RING THE TTY BELL DURING THE HASHSUM CALCULATION.
                  15 # FIX PROGRAM ERROR WHICH RESULTS IN A NONRECOVERY SITUATION IF
                  16 # THE OFFLINE TAPE CONTAINS A BAD BLOCK (OTHER THAN A CRC ERROR).
                  17      TCEND
-001- 18      NOTE *****

                **/**/**/013299/**/**/**
0024000        -002- 25      PBEGIN  PROG=CIPL      TRNO=13299  SERN0B=49252
                  26 # REPATCH TWO WORDS OF CIPL TO COMPENSATE FOR A LOADER BUG.
                  27 # NECESSARY ONLY FOR THE BIT MATCH - PATCHES TC 62873 (CIPL PROGRAM).
                  28      TCEND
-001- 29      NOTE *****

```

COMMON INITIAL PROGRAM LOADER

PR-1C953-50

0:21:11 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CIPL ISSUE 05 PAGE 75

PATCH HISTORY

0:21:11 2/06/81 ****

LISTING OF INDIVIDUAL PATCHES

CIPL W77D

//*/013712/*/*/*/

-002- 01 PBEGIN PROG=CIPL TRNO=13712 SERN0B=50340
 02 # CHANGES CIPL TO ALLOW FOR A 'FLOATING' TRNSLN FILE AFTER
 03 # GENERIC IS LOADED
 04 # ALSO CORRECTS FAST SEARCH ALGORITHM FOR BOT
 05 # THE NEXT 3 PATCHES CORRECT THE POSSIBLE PROBLEM
 06 # THAT IF THE OFFLINE TAPE WAS FAULTY, RELOAD WAS NOT
 07 # POSSIBLE. THIS WAS DUE TO IMPROPER BUFFER ADMINISTRATION
 08 # DURING RECOVERY. (EOS CR10809).
 09 TCEND
 -001- 10 NOTE *****

0024000

0024000

17 END

COMMON INITIAL PROGRAM LOADER

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PATCH HISTORY

0:21:11 2/06/81 ★★★★★

[illegible]

COMMON INITIAL PROGRAM LOADER

PR-1C953-50

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PATCH HISTORY

0:21:11 2/06/81 ****

VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CIPL	W77D
0011113	L	ASCHCLNX	32-28	32-18		
0011035	L	ASCHEDULE	31-04	33-15		
0013520	L	ASTATE	73-01	28-43, 31-20, 51-18, 52-16, 52-19, 54-31, 54-32, 54-47, 57-41, 58-12, 60-14		
0011136	L	AVERCONT	33-01	32-16		
0011123	L	AVERREC	32-39	32-15, 52-06		
0000011	A	BACKORD		LIBNUM=6 44-32		
11	R	BADAK	4-28	W=1 S=2 N=0 CL=1 23-01, 25-32, 27-09		
0013500	L	BASEGENR	72-16	21-12, 28-42, 35-03, 36-09, 51-21		
0013503	L	BASEPAT	72-22	21-19		
0013501	L	BASEXLAT	72-18	35-02		
0	U	BBX		1-08		
0011362	L	BBSCHB	38-04	37-21, 38-45, 39-29, 40-22, 41-18, 41-47, 42-12, 42-33, 43-30, 44-38, 46-25		
0012521	L	BCK	56-22	56-17		
0012131	L	BCKRECV	49-33	33-20		
0011161	L	BCKRECV1	33-19	32-12, 51-49		
0020013	A	BCLRBRF		LIBNUM=6 15-47, 19-48, 43-26		
0120013	A	BCLROCN		LIBNUM=6 15-39, 19-38, 43-06		
0000000	A	BLKADR		W=13 S=0 N=0 CL=3 LIBNUM=6 14-33, 14-35, 18-31, 18-33, 40-48, 48-24		
0013556	D	BLKDIGOFF	74-17	29-29, 53-21, 53-33		
0013555	D	BLKDIGON	74-16	34-32, 35-47		
0013554	D	BLKINCOF	74-13	29-25, 53-20, 53-43		
0013553	D	BLKINCON	74-12	34-31, 36-08		
MASACS	V	BLKPERCK	11-21	51-22		
0010000	A	BLKSIZ		7-44		
MASACS	V	BLKSIZE	11-09	14-41, 18-45		
MASACS	V	BLK4K	11-10	29-24, 35-04, 36-01, 53-36, 74-12, 74-13		
4	R	BLOKCNT	13-04			
0000000	A	BOFL		5-12 W=1 S=16 N=0 CL=3		
0010502	L	BOOTLOAD	22-45	12-04, 17-40		
0010774	L	BOOTLOOP	29-37	33-14, 56-20, 56-34, 57-24		
0013422	L	BOOTPATCH	71-01			
CINIT	V	BOOTRTN	11-35	27-16, 58-37		
0010000	L	BOOTSTP	13-42	13-44		
0000000	A	BOT	4-13	W=1 S=16 N=0 CL=3 40-45		
0010001	L	BOTST	13-48	14-01		
0000000	A	BR	5-05	W=1 S=7 N=0 CL=3 15-35, 19-33, 42-45		
0012423	L	BREDCON	54-26	52-08		
0000003	A	BSBOT	6-18	W=1 S=11 N=3 CL=3 52-46, 52-48, 67-32		
0012731	L	BSCHCLN	60-12	52-09		
0011244	L	BSCHEDU	35-42	31-35, 34-27, 35-36		
0012136	L	BSCHEDULE	50-18	33-16, 35-43		
0010754	L	BSCHWORK	29-23	29-18, 67-46		
0000013	A	BSTAT		LIBNUM=6 15-32, 19-29, 42-42		
0013527	L	BSTATE	73-17	28-44, 33-02, 33-05, 35-23, 35-24, 50-28, 54-09, 54-14, 57-30, 57-33, 58-06, 58-46		
0013344	L	BSTRBL	67-31	67-10		
0044013	A	BSUNLDON		LIBNUM=6 15-37, 19-35, 43-03		
0000207	A	BTLODOFS	17-39	12-03		
0013072	L	BTODON	62-32	61-17, 61-26, 61-36, 61-40, 63-24, 65-19		
MASACS	V	BUFBK	11-11	14-15, 15-28, 18-20		

COMMON INITIAL PROGRAM LOADER

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PATCH HISTORY

0:21:11 2/06/81 ****

VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CIPL	W77D
0000003	A	BUFC	6-11	W=4 S=0 N=3 CL=3	12-05, 37-25, 43-09, 43-10, 43-13, 44-16, 45-32, 46-17, 59-27	
0010313	L	BUFERS	19-28	18-25		
	2	R BUFFCNT	13-02			
MASACS	V	BUFLEN	11-12			
0012273	L	BVERCONT	52-15	52-07		
0013507	D	BXKONOFF	72-29	29-32, 53-22, 53-44		
0013506	D	BXKONON	72-28	21-30, 34-28, 36-12		
0010567	L	CALCHASH	24-05	27-04		
0013115	L	CARRYO	63-14	61-32		
0000003	A	CARYBIT	6-12	W=1 S=4 N=3 CL=3	61-31, 62-30, 63-35, 64-09, 65-16	
0013542	L	CDEST	73-41			
0013540	L	CEA	73-37	67-37		
0012334	L	CHECKIT	53-16			
0011163	L	CHECKTBL	34-19	32-03		
0012303	L	CHECKTBLOFF	52-36	51-16, 51-31		
0000000	L	CHKSUM	74-28	12-06, 21-13, 21-31, 23-46, 34-29, 53-18		
0010575	L	CHKSUMLP	24-37	26-44		
0011512	L	CHKTIM	42-01	32-35, 52-04		
0011121	L	CHKTIMX	32-34	32-14		
0010000	L	CIPL	1-39	17-05, 17-39, 18-01, 24-07, 26-14, 34-42, 59-37		
0000017	A	CLEANSW		LIBNUM=6 47-40		
0010224	L	CLRPT	18-21	20-02		
'L1DATA'	T	CLRTAB				
0012560	L	CMON	57-08	56-38		
0000004	A	CONRCV	6-28	W=1 S=15 N=4 CL=3	44-31, 45-43, 47-10, 47-19, 47-24	
0000016	A	CONREDFAL		LIBNUM=6 47-01		
	7	R CONSEC	13-07			
0013230	L	CONSGEN	65-23	38-30, 41-45		
0012661	L	CONTCLEAN	58-47	60-20		
0011762	L	CONFAL	46-26	46-09		
0012476	L	CONTINC	56-06	56-03		
0012307	L	CONTINUB	52-41	52-38		
0000010	A	CONTREAD		LIBNUM=6 42-26		
0011466	L	CONTVERIT	41-04	40-46		
0013515	D	COUNT	72-42			
0013537	L	CPTP	73-35			
0010346	L	CR CER	20-07	18-30		
0011636	L	CRCFAIL	44-08	42-11		
0011626	L	CRCLOOK	44-01			
0010131	L	CR CMES	16-05	14-25		
0011664	L	CRCOK	44-42	44-07		
0012625	L	CREDCON	58-01	57-03		
0013102	L	CR3K	62-43	63-41		
0012457	L	CSCHEDUL	55-42	12-07, 33-17, 50-47, 52-40, 52-43, 52-45, 53-07, 53-26		
0012525	L	CSTARTED	56-28	56-09		
0013541	L	CSTAT	73-39			
0013536	L	CSTATE	73-33	21-23, 21-24, 21-25, 54-35, 54-36, 55-01, 55-48, 60-17		
0013543	L	CTIME	73-43			
0012606	L	CVERCONT	57-29	57-02		

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PATCH HISTORY

0:21:11 2/06/81 ****

VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CIPL	W77D
0000001	A	DATA_AREA		W=20 S=0 N=1 CL=3 LIBNUM=6	45-13, 45-17, 45-20, 59-12, 59-13, 59-16, 61-24	
0010062	L	DATACHK	15-04	15-13		
0010274	L	DATACHK2	19-08	19-21		
0010067	L	DATAVL	15-10	15-05		
0010301	L	DATAVL2	19-14	19-09		
11	R	DB		LIBNUM=10 30-11		
0000000	A	DDT	4-10	W=1 S=13 N=0 CL=3		
0013533	L	DESTOFF	73-25			
0000004	A	DESTON	6-25	W=13 S=0 N=4 CL=3 12-08, 21-23, 36-11, 36-49, 38-33, 38-34, 46-22, 48-01, 48-02, 48-29, 51-23, 53-45, 54-19, 57-13, 59-09, 65-34		
0000000	A	DEVIDE	4-04	W=6 S=0 N=0 CL=3		
0013263	L	DIVIDE	66-24	66-20		
11	R	DOALL	4-26	W=1 S=0 N=0 CL=1 23-01, 23-11, 24-43		
0011351	L	DOBKUP	37-44	37-40, 49-36		
0012065	L	DOEOFCK	48-17	45-34		
0011246	L	DOIT	35-44	35-32		
0012345	L	DOLOOK	53-23	53-35, 53-38		
0011716	L	DONOTSTR	45-25	12-09, 45-10, 47-11, 47-49, 48-05, 62-35		
0012205	L	DONSET	51-11	51-20		
0000002	A	EA	6-10	W=20 S=0 N=2 CL=3 31-28, 33-05, 33-06, 35-23, 35-24, 35-27, 35-37, 50-41, 52-19, 52-20, 54-14, 54-16, 54-31, 54-35, 54-39, 56-07, 56-27, 57-33, 57-38, 57-41, 58-09, 58-12, 59-05, 59-43, 67-14, 67-36		
0013531	L	EAOFF	73-21	21-46, 29-05, 35-38, 56-11, 67-21		
0013522	L	EAON	73-05	21-45, 56-10, 67-17, 67-23, 67-35		
0000006	A	EASV	6-31	W=20 S=0 N=6 CL=3 54-13, 54-40, 58-14, 59-04		
0013544	L	EASVC	73-45			
0013535	L	EASVOF	73-28			
0013526	L	EASVON	73-12			
0000000	A	EOF		W=1 S=15 N=0 CL=3 LIBNUM=6 15-18, 18-38, 19-25, 43-33, 44-46, 48-18, 59-30		
0000004	A	EOFF	6-29	W=1 S=16 N=4 CL=3 61-16, 61-39		
0000000	A	EOT	4-07	W=1 S=10 N=0 CL=3		
0013123	L	EQLT0	63-22	63-30, 64-10		
0000004	A	ERNO	6-27	W=1 S=14 N=4 CL=3 37-07, 37-18, 46-08, 46-46, 51-05, 51-07, 51-12		
0011534	L	ERRLOOK	42-22	43-23		
0	J	ESS2	1-10			
1	J	ESS2E	1-09			
0000007	A	EVALPOS		LIBNUM=6 45-36		
0013254	L	FAST	66-16	66-11		
0011402	L	FASTFWD	38-39	38-37		
0011363	L	FASTPOS	38-26	32-04, 51-33		
0000003	A	FASTSTP		LIBNUM=6 38-42, 44-35		
1	J	FIELD	1-09			
0010722	L	FILEOK	29-01	28-47		
0000000	A	FILL	5-13	W=1 S=17 N=0 CL=3		
0000005	A	FORCOPY	7-13	W=1 S=16 N=5 CL=3 24-44, 25-19, 25-31, 36-02, 53-37		
MASACS	V	FSTDIST	11-13	66-10		
0011411	L	FSTOPTST	39-15	32-06, 33-07, 51-37, 57-39		
0013504	L	GENAKNO	72-24	21-26, 29-27		
0012622	L	GETAEA	57-40	57-35		

COMMON INITIAL PROGRAM LOADER

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0:21:11 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CIPL ISSUE 05 PAGE 80

PATCH HISTORY

0:21:11 2/06/81 ****

VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES
0012524	L	GETEAIN	56-26	56-21, 56-24
0012413	L	GOFIN	54-15	54-41, 58-16
'+19'	T	HADR		W=4 S=0 N=23 CL=2
0000005	A	HASHLEN	7-11	W=15 S=0 N=5 CL=3
0013477	D	HASHSAVE	72-15	24-14, 25-24, 26-05
MASACS	V	HASHSUMN	11-14	25-27
'+0'	T	HDRSIZE		W=20 S=0 N=0 CL=2
0013341	L	HG	67-26	67-47
0000065	A	HGXT		LIBNUM=10 14-13
LAYOUT	V	HGAREA	11-04	14-10
0011605	L	HR	43-20	43-21
LAYOUT	V	I_OBUF	11-05	14-34, 15-29, 18-19, 18-32, 31-17, 55-45
'ILLEGAL CON				
DITIONAL IN				
THE IF MACRO 'T IFERROR1				
'DATA > 0 OR				
DATA < 0 IS				
MEANINGLESS				
'USE DATA ~				
= 0' T IFERROR2				
'TWO CONSTAN				
TS ARE BEING				
COMPARED IN				
IF MACRO' T IFERROR3				
'AN ITEM WAS				
COMPARED TO				
SOMETHING O				
THER THAN A				
CONSTANT' T IFERROR4				
'DESTINATION				
OF AN = STA				
TEMENT IS A				
CONSTANT' T IFERROR5				
'ATTEMPTING				
TO SET ITEM				
= TO SOMETHI				
NG OTHER THA				
N A CONSTANT' T IFERROR6				
'ITEM MAY ON				
LY USE THE =				
AND ~ COND				
ITIONALS' T IFERROR7				
0010062	L	IFS270	15-04	15-02
0010274	L	IFS283	19-08	19-06
0010507	L	IFS297	23-02	22-49
0010617	L	IFS311	25-17	25-03
0010636	L	IFS314	25-35	25-22
0010646	L	IFS317	25-48	25-46
0010653	L	IFS318	26-04	26-02

COMMON INITIAL PROGRAM LOADER

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0:21:11 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CIPL ISSUE 05 PAGE 81

PATCH HISTORY

0:21:11 2/06/81 ****

VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CIPL	W770
0013220	L	IGNORNXT	65-13	65-03		
0000001	A	INDEXCNTR	7-48			
	T	INDEXTITLE1				
0040007	A	INIT		LIBNUM=6 16-11, 18-40, 20-11, 29-06, 40-49, 44-09, 46-32, 47-32		
CINIT	V	INITBOOT	11-38	22-01		
0010416	L	INITLO	21-15	21-18		
CINIT	V	INITTSTC	11-39	17-21, 17-32		
CTSD	V	INITTST1	11-29	17-20		
CTSD	V	INITTST2	11-30	17-26		
0066540	A	INTERCOM		LIBNUM=6 29-04		
0000001	A	INTHNR	6-09	W=1 S=17 N=1 CL=3 31-25, 34-23, 46-29, 46-48, 47-25, 50-33, 50-39, 52-39, 54-09, 54-11, 54-17, 54-32, 54-33, 54-36, 56-04, 57-16, 59-29, 62-33		
0000000	A	INTOFF	5-07	W=1 S=11 N=0 CL=3		
0000001	A	INTREQ	6-08	W=1 S=16 N=1 CL=3 31-23, 34-21, 50-31, 52-37, 54-10, 55-08, 56-02, 57-14, 60-15		
0011701	L	KEEPGO	45-11	47-27		
0010221	L	KEEPRD	18-18	18-12, 19-26, 20-41, 22-11		
0011202	L	KEEPUP	34-33	35-49, 36-03		
0000021	A	KILLSYS		LIBNUM=6 60-37		
'+20'	T	LADR		W=20 S=0 N=24 CL=2		
MASACS	V	LASTBUF	11-15	43-29		
CINIT	V	LDDB15_0	11-40	30-16		
0000000	A	LINECNT				
0011730	L	LODEVAL	45-35	41-03		
0000000	A	LODST	5-08	W=1 S=12 N=0 CL=3		
0013105	L	LODSTR	63-01	62-40		
'BUFSTAT'	T	LONAM_ACTIV				
'OFLBOOTSW'	T	LONAM_ACTSEQ				
'R9'	T	LONAM_ALLMAS				
'R9'	T	LONAM_BADAK				
'BUFSTAT'	T	LONAM_BOFL				
'TAPSTAT'	T	LONAM_BOT				
'BUFSTAT'	T	LONAM_BR				
'R9'	T	LONAM_BSBOT				
'R9'	T	LONAM_BUFC				
'R9'	T	LONAM_CARYBI				
'R9'	T	LONAM_CONRCV				
'TAPSTAT'	T	LONAM_DDT				
'TAPSTAT'	T	LONAM_DESTON				
'TAPSTAT'	T	LONAM_DEVICE				
'R9'	T	LONAM_DOALL				
'R9'	T	LONAM_EA				
'R9'	T	LONAM_EASV				
'R9'	T	LONAM_EOPF				
'TAPSTAT'	T	LONAM_EOT				
'R9'	T	LONAM_ERNO				
'BUFSTAT'	T	LONAM_FILL				
'CHKSUM'	T	LONAM_FORCOP				

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VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CIPL	W77D
		Y				
'CHKSUM'	T	LONAM_HADR				
	T	LONAM_HASHLE				
	N					
	T	LONAM_HDRSIZ				
	E					
	T	LONAM_INTHNR				
'BUFSTAT'	T	LONAM_INTOFF				
	T	LONAM_INTREQ				
	T	LONAM_LADR				
'BUFSTAT'	T	LONAM_LODST				
'TAPSTAT'	T	LONAM_MOP				
'TAPSTAT'	T	LONAM_MTCE				
	T	LONAM_NEWD				
	T	LONAM_NEWDH				
'R9'	T	LONAM_NOTEST				
'OFLBOOTSW'	T	LONAM_OFLBTS				
	W					
	T	LONAM_OLD				
	T	LONAM_OLDH				
	T	LONAM_OWNO				
	T	LONAM_OWSTAT				
'R9'	T	LONAM_PASS				
	T	LONAM_PATLEN				
	6TH					
'BUFSTAT'	T	LONAM_PPE				
'CHKSUM'	T	LONAM_PROGBL				
	KS					
	T	LONAM_PTPKNO				
	WN					
	T	LONAM_PTPOS				
'BUFSTAT'	T	LONAM_RDY				
	T	LONAM_RECOV				
'TAPSTAT'	T	LONAM_REWND				
	T	LONAM_SCHCON				
	1					
	T	LONAM_SCHCON				
	2					
	T	LONAM_SEGNO				
	T	LONAM_SPECST				
	OR					
	T	LONAM_STATE				
	T	LONAM_STORNO				
	T					
'BUFSTAT'	T	LONAM_STUFF				
	T	LONAM_STUS				
'TAPSTAT'	T	LONAM_TIM				
	T	LONAM_TIMING				
	T	LONAM_TIMKON				

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VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CIPL	W77D
'TAPSTAT'	T	LONAM_TOR				
'	T	LONAM_TR				
'CHKSUM'	T	LONAM_TSFLG				
'	T	LONAM_TUOOS				
'TAPSTAT'	T	LONAM_TUR				
'BUFSTAT'	T	LONAM_UNST				
'	T	LONAM_VERT				
'TAPSTAT'	T	LONAM_WENBL				
'CHKSUM'	T	LONAM_WOPEN				
'	T	LONAM_WRDLEN				
		6TH				
0012572	L	LONGSCHED	57-17	52-18		
0012574	L	LOOKATB	57-19	57-15		
0013502	L	LST4K1	72-20	21-28, 29-26, 34-34		
0012454	L	MAKEIT	55-02	54-49		
0012446	L	MAKERQ	54-45	54-37		
0013511	D	MATEOOS	72-34	29-22, 32-41, 32-44, 35-05, 35-21, 37-11, 51-08, 54-06, 54-28, 58-03, 67-03, 67-06		
0013300	L	MEME	66-45	66-46		

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t.- (18
  ts*);
-2/
-2-?
: #0'=" ab
cdefghi n<(+
+ jklmnopqr~
x)z=-stuvv
xyz+Lr[2=012
3456789+J]#
- (ABCDEFGHI
  JKL MN O
PQR \ S
TUVWXYZ
0123456789

```

0000000	A	MOP	4-14	W=1 S=17 N=0 CL=3
0010213	L	MOREBOT	18-07	15-23, 19-27
0010103	L	MRBUFRS	15-31	14-20
0013022	L	MRPAT	61-41	61-38
16	R	MS	LIBNUM=10	23-08
MASACS	V	MSECPR	11-16	66-22
0000000	A	MTCE	4-11	W=1 S=14 N=0 CL=3
0013210	L	MUSTCRY	65-01	64-37, 64-40
0010532	L	MY1	23-25	23-26

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VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CIPL	W770
0010540	L	MY2	23-30	23-31		
'+21'	T	NEWD		W=20 S=0 N=25 CL=2		
'+22'	T	NEWDH		W=10 S=10 N=26 CL=2		
0010050	L	NEWLA	14-42	15-08		
0010262	L	NEWLA2	18-46	19-12		
0011146	L	NEXTSCHED	33-11	31-26, 33-04, 34-24, 38-05, 54-12, 55-13, 57-18, 58-08, 59-31, 61-01, 67-25		
0012121	L	NOACTSEQ	49-01	48-28, 48-32		
0010546	L	NOANS	23-35	23-33		
0013446	L	NOBELL	26-29	26-23		
0012164	L	NOCHANCE	50-40	50-32, 50-36, 50-38		
0010636	L	NOCOPY	25-33	25-30		
0011671	L	NOEOF	45-03	44-47		
0010170	L	NONE	16-37	16-35		
0010405	L	NONE2	20-38	20-36		
0013171	L	NONRES	64-28	62-13		
0010151	L	NOONE	16-22	16-20		
0010364	L	NOONE2	20-22	20-20		
0010260	L	NOSTOP	18-44	18-39		
11	R	NOTEST	4-29	W=1 S=3 N=0 CL=1 24-34, 24-41		
MASACS	V	NOTESTCK	11-17	24-17		
0010463	L	NOTON	21-43	21-41		
0011226	L	NOTRKCHG	35-31	34-36		
0011054	L	NOWAY	31-27	31-24		
0012767	L	NXBL	61-01	59-45		
0011525	L	NXTATE	42-16	42-06		
0013167	L	NXTBLKIN	64-22	62-03, 62-09		
0013036	L	NXTBOUND	62-04	61-49		
0013510	D	NXTSCH	72-33	31-16, 33-12, 50-23, 55-44, 67-08		
0011761	L	NXTSCHB	46-24	50-34		
0013043	L	NXTSEG	62-10	62-46, 64-45		
0011132	L	NXTVER	32-45			
MASACS	V	OBUFLEN	11-18	61-18		
0000000	L	OFFSET	13-43	14-20, 15-05, 15-13, 15-46, 16-17, 16-32		
CINIT	V	OFL_HG	11-41	14-10		
0006453	A	OFLBOOTCON	7-47	17-19, 69-19		
0013476	L	OFLBOOTSW	72-02	17-18, 21-49, 23-09, 27-18, 58-39, 69-18, 72-04, 72-06		
0010175	L	OFLBOOTTBLE	17-06	17-17		
0010207	L	OFLBOOTTTST	17-37	17-17		
0013373	L	OFLBOOTTTST	69-15	23-04, 23-20, 23-39, 26-07, 27-15, 29-44, 30-13, 58-36, 70-19		
0000175	A	OFLBTOFS	17-05	12-15		
0013476	L	OFLBTSW	72-04	W=14 S=0 N=0 CL=4 69-20		
'+23'	T	OLD		W=20 S=0 N=27 CL=2		
'+22'	T	OLDH		W=10 S=0 N=26 CL=2		
0013524	L	ONDEST	73-09			

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VALUE T NAME DEF/REF ATTRIBUTES AND REFERENCES

CIPL W77D

```

<.(AON
  X$*);
-S/
/X_>?
: #D'L" ab
cdefghi n$<+
+ jklmnopqr-
m) s- -stuvw
xyz+Lr[>=012
3456789+j]x
-(IBCLEFGHI
)JKLMNO
PQR \ S
LLLMLYZ
0123456789

```

	T	OPTR			
0011603	L	ORDER	43-17	43-25	
12	R	ORDEREG	13-08		
0013276	L	ORDOUT	66-40	19-32, 19-37, 19-40, 19-45, 20-01, 20-24, 20-28, 20-40, 37-30, 38-03, 38-41, 39-19, 40-08, 40-20, 40-44, 41-02, 41-09, 42-04, 42-19, 42-44, 43-05, 43-08, 43-28, 45-02, 47-34	
0000417	A	ORG_000075	15-20		
0000421	A	ORG_000204	17-23		
0000425	A	ORG_000207	17-34		
0000455	A	ORG_000567	24-02		
0000501	A	ORG_000660	26-10		
0000530	A	ORG_001206	34-38		
0000607	A	ORG_001640	44-11		
0000616	A	ORG_001756	46-14		
0000640	A	ORG_002454	55-04		
0000653	A	ORG_002727	59-33		
0000665	A	ORG_002767	60-43		
0000676	A	ORG_003236	65-38		
0000457	A	ORG_003422	24-13		
0000503	A	ORG_003432	26-20		
0000532	A	ORG_003450	35-02		
0000655	A	ORG_003462	59-43		
0012516	L	OUT	56-19	56-05, 56-14, 57-32	
16	R	OVLOF		W=1 S=0 N=0 CL=1 LIBNUM=10	23-07
0013012	L	OVWRT	61-33	62-45, 63-37, 64-18, 64-44	
'+13'	T	OWNO		W=20 S=0 N=15 CL=2	
'+17'	T	OWSTAT		W=2 S=0 N=21 CL=2	61-42, 61-44
0000020	A	PACKINT		LIBNUM=6	46-40
0000001	A	PAGECNT			
0000062	A	PAGL	1-39		
0010611	L	PARCORRLP	25-07	25-15	
11	R	PASS	4-27	W=1 S=1 N=0 CL=1	25-25, 27-02, 27-03
0013550	L	PATADR	74-07	62-23, 62-24, 63-42, 63-43	
0012771	L	PATCHUNL	61-15	72-45	

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VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CIPL	W77D
0013547	L	PATESSWD	74-05	62-29, 63-38		
'+12'	T	PATLENGTH		W=20 S=0 N=14 CL=2	61-28, 61-29, 61-42, 62-05	
0013546	L	PATOTLEN	74-03	62-28, 63-31, 64-08, 65-18		
0013512	D	PATTERN	72-39	29-38		
0013513	D	PATTERN1	72-40	60-40		
0013514	D	PATTERN2	72-41	60-41		
0011064	L	PAX	32-01	31-31		
0012535	L	PAXC	56-36	56-30		
0012226	L	PAXOFF	51-28	50-43, 51-04, 51-06		
	S	PGMCNT	13-05			
0010410	L	PHASE3	21-09	18-14		
CINIT	V	PMISC	11-37			
0013247	L	POSITIVE	66-08	66-05		
CTSD	V	POSTMORT	11-32			
0000000	A	PPE	5-04	W=1 S=6 N=0 CL=3		
0013153	L	PROCHA	64-01	61-45		
0000004	A	PROGBLKS	7-10	W=20 S=0 N=4 CL=3	12-16, 23-46	
0013126	L	PSTV	63-28	63-18		
0000003	A	PTPKOWN	6-13	W=1 S=5 N=3 CL=3	29-03, 35-28, 36-13, 38-28, 49-03, 53-46, 57-10, 59-01, 59-06	
0013530	L	PTPOFF	73-19			
0013521	L	PTPON	73-03			
0000001	A	PTPOS	6-05	W=13 S=0 N=1 CL=3	21-20, 29-02, 36-48, 37-01, 37-02, 37-35, 37-37, 37-38, 38-31, 38-32, 45-08, 47-15, 47-18, 47-21, 48-31, 49-02, 54-18, 54-19, 57-12, 57-13, 58-46, 58-48, 59-01, 60-19, 65-35, 65-36, 65-41	
BLMMA	V	PTRESET	11-01	70-23		
14	P	RAO		LIBNUM=3	14-14, 14-34, 14-40, 14-43, 14-44, 15-11, 15-29, 15-45, 18-19, 18-32, 18-37, 18-47, 18-48, 19-15, 19-46, 21-12, 21-16, 21-38, 23-46, 23-47, 23-48, 24-38, 24-39, 25-38, 25-39, 25-40, 25-41, 25-42, 27-01, 28-44, 28-48, 29-21, 29-38, 29-39, 29-48, 29-49, 30-03, 30-04, 30-07, 30-10, 31-20, 31-23, 31-25, 31-28, 31-29, 31-32, 31-36, 33-06, 34-21, 34-23, 34-26, 35-19, 35-27, 35-28, 35-30, 35-33, 35-37, 35-41, 36-11, 36-13, 36-48, 36-49, 37-07, 37-15, 37-17, 37-18, 37-20, 37-25, 37-26, 37-35, 37-37, 37-42, 37-43, 37-48, 37-49, 38-28, 38-31, 38-33, 38-43, 38-44, 39-22, 39-27, 39-28, 40-05, 40-10, 41-06, 41-10, 41-13, 41-17, 41-46, 42-08, 42-27, 42-32, 43-01, 43-09, 43-13, 44-16, 44-24, 44-25, 44-26, 44-28, 44-29, 44-31, 44-37, 45-04, 45-08, 45-09, 45-12, 45-21, 45-22, 45-32, 45-33, 45-37, 45-43, 45-45, 45-47, 45-49, 46-08, 46-12, 46-17, 46-22, 46-28, 46-29, 46-38, 46-39, 46-46, 46-48, 47-08, 47-10, 47-14, 47-15, 47-18, 47-19, 47-24, 47-25, 47-38, 47-39, 47-46, 48-01, 48-04, 48-23, 48-26, 48-29, 48-30, 48-33, 48-35, 48-36, 48-38, 48-40, 48-42, 49-02, 49-03, 49-04, 49-05, 49-35, 50-28, 50-31, 50-33, 50-35, 50-37, 50-39, 50-41, 50-42, 50-44, 50-48, 51-03, 51-05, 51-07, 51-12, 51-13, 51-15, 51-23, 52-20, 52-37, 52-39, 52-42, 52-44, 52-46, 52-48, 52-49, 53-04, 53-05, 53-06, 53-11, 53-12, 53-25, 53-45, 53-46, 54-13, 54-16, 54-17, 54-18, 54-19, 54-39, 54-40, 55-48, 56-02, 56-04, 56-07, 56-27, 56-29, 56-31, 56-35, 57-09, 57-10, 57-12, 57-13, 57-14, 57-16, 57-38, 58-14, 58-46, 58-49, 59-01, 59-02, 59-03, 59-05, 59-06, 59-09, 59-10, 59-17, 59-18, 59-22, 59-24, 59-27, 59-28, 59-29, 59-43, 60-14, 60-15, 60-17, 60-19, 60-35, 60-36, 60-38, 61-16, 61-22, 61-27, 61-31, 61-39, 62-15, 62-16, 62-23, 62-24, 62-25, 62-26, 62-30, 62-31, 62-33, 62-41, 62-42, 63-07, 63-09, 63-35, 63-42, 63-43, 64-09, 65-16, 65-34, 65-36, 66-34, 67-07, 67-14, 67-15, 67-25, 67-32, 67-33, 67-36, 67-44, 67-46	
16	P	RA1		LIBNUM=3	15-01, 15-03, 15-12, 19-05, 19-07, 19-17, 19-20, 21-13, 21-14, 21-17, 21-31, 21-35, 21-36, 21-37, 23-49, 25-10, 25-13, 25-45, 25-47, 25-48, 28-43, 28-49, 29-02, 29-03, 31-17, 34-29, 34-30, 35-46, 37-09, 40-48, 43-15, 43-24, 43-33, 45-06, 45-15, 45-17, 45-20,	

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VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CIPL	W77D
				45-21, 45-22, 45-29, 47-13, 48-24, 50-24, 50-25, 53-18, 53-19, 53-31, 54-09, 54-10, 54-20, 54-21, 54-47, 54-48, 55-01, 55-08, 55-45, 58-06, 58-07, 58-09, 59-07, 59-12, 59-13, 59-16, 59-17, 59-18, 59-23, 59-25, 59-30, 61-21, 61-24, 61-29, 61-34, 61-42, 62-05, 62-11, 62-14, 62-15, 62-16, 63-02, 63-03, 63-08, 63-32, 64-17, 64-29, 64-42, 68-04		
0000000	A	RDY	5-06	W=1 S=10 N=0 CL=3		
0010474	L	READCKSUM	22-05	18-13		
0011546	L	READON	42-40	32-25, 51-47		
0011107	L	READONX	32-24	32-11		
0000001	A	RECOV	6-06	W=1 S=13 N=1 CL=3	44-26, 44-28, 45-04, 46-28, 47-14, 48-38, 48-40, 67-15, 67-33	
0012011	L	RECOVCHK	47-06	45-05		
0011734	L	RECOVIP	45-42	44-27		
0012713	L	RECOVUNL	59-21	62-34		
MASACS	V	REDKON	11-19	37-47, 39-26, 42-49, 44-23, 47-37, 53-03		
0000012	A	REDRCV		LIBNUM=6 49-34		
0011451	L	REDVER	40-40	32-09, 36-14, 37-34, 51-43, 53-48, 57-11		
0000006	A	REDVERST		LIBNUM=6 40-23, 48-41		
0011506	L	REEVAL	41-43	32-33, 36-15, 51-45, 53-49		
0011117	L	REEVALX	32-32	32-10		
0010175	L	REMAINBOOT	17-01	14-14		
0012741	L	REPKNRF	60-24	32-31, 52-10, 57-05		
0011115	L	REPKNRFX	32-30	32-19		
0011335	L	REPOSI	37-32	37-04		
0012002	L	REQINT	46-45	45-44, 47-23		
0012443	L	REQUGO	54-38	54-34		
0010477	L	RERT	22-08	22-10		
CBLM	V	RESETPT	11-24	26-21, 30-18		
0010104	L	RESND	15-33	15-36		
0010314	L	RESND2	19-30	19-34		
0010154	L	RESTAT	16-25	16-28		
0010370	L	RESTAT2	20-26	20-30		
0011661	L	RESTRV	44-34	44-30, 46-03		
0000000	A	REWND	4-12	W=1 S=15 N=0 CL=3		
CINIT	V	RLDXLATE	11-36			
0010707	L	RL0D	28-01	27-10, 27-13		
..	T	RMK_ACTIV				
'ACTIVATE SE						
Q. ERROR CHE						
CK'	T	RMK_ACTSEQ				
' FULL MEMOR						
Y RELOAD CON						
TROL'	T	RMK_ALLMAS				
' RELOAD OF						
AT LEAST ONE						
4K REQUIRED'	T	RMK_BAD4K				
..	T	RMK_BOFL				
..	T	RMK_BOT				
..	T	RMK_BR				
..	T	RMK_BSBOT				
..	T	RMK_BUFC				

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VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES
' PATCH CROS				
SES BLOCK BO				
UNDRY'	T	RMK_CARYBIT		
' CONTINUOUS				
READ RECOVER				
RY.'	T	RMK_CONRCV		
''	T	RMK_DDT		
' TAPE DESTI				
NATION'	T	RMK_DESTON		
''	T	RMK_DEVICODE		
' FORCE ALL				
MEMORY TO RE				
LOAD'	T	RMK_DOALL		
' TAPE ENABL				
E ADDRESS'	T	RMK_EA		
' SAVED EA F				
OR RECOVERY'	T	RMK_EASV		
'END OF PATC				
H FILE SEEN.'	T	RMK_EOPF		
''	T	RMK_EOT		
'ERROR RECOV				
ERY NOT ALLO				
WED'	T	RMK_ERNO		
''	T	RMK_FILL		
' BIT SET TO				
FORCE COPY				
OF BLOCK'	T	RMK_FORCOPY		
' HIGH BITS				
OF PATCH ADD				
RESS.'	T	RMK_HADR		
' LENGTH FOR				
HASHSUM CAL				
C.'	T	RMK_HASHLEN		
' LENGTH OF				
HEADER.'	T	RMK_HDRSIZE		
' INT. REQUE				
ST HONORED.'	T	RMK_INTHNR		
''	T	RMK_INTOFF		
' INTERRUPT				
REQUESTED.'	T	RMK_INTREQ		
' PATCH ADDR				
ESS'	T	RMK_LADR		
''	T	RMK_LODST		
''	T	RMK_MOP		
''	T	RMK_MTCE		
' LOW 16 BIT				
S OF NEW DAT				
A.'	T	RMK_NEWD		
' HIGH 8 BIT				

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VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CIPL	W77D
S OF NEW DAT						
A.'	T	RMK_NEWDH				
' DO NOT TES						
T FOR RELOAD'	T	RMK_NOTEST				
' NORMAL/OFF						
LINE BOOTSTR						
AP SWITCH'	T	RMK_OFLBTSW				
' LOW 16 BIT						
S OF OLD DAT						
A.'	T	RMK_OLD				
' HIGH 8 BIT						
S OF OLD DAT						
A.'	T	RMK_OLDH				
' OVERWRITE						
NUMBER.'	T	RMK_OWNO				
' OVERWRITE						
STATUS'	T	RMK_OWSTAT				
' GENERIC/TR						
NSLN PASS'	T	RMK_PASS				
' TOTAL LENG						
TH OF PATCH						
FILE.'	T	RMK_PATLENGT				
	T	RMK_PPE				
' NUMBER OF						
GENERIC RELA						
TED CHECKSUM						
S.'	T	RMK_PROGBLKS				
' TAPE POSIT						
ION KNOWN FL						
AG'	T	RMK_PTPKNOWN				
' TAPE POSIT						
ION'	T	RMK_PTPOS				
	T	RMK_RDY				
' ERROR RECO						
VERY IP'	T	RMK_RECOV				
	T	RMK_REWNO				
' SCHEDULER						
CONTROL BIT'	T	RMK_SCHCON1				
' SCHEDULER						
CONTROL BIT'	T	RMK_SCHCON2				
' SEGMENT NU						
MBER'	T	RMK_SEGNO				
' SPEC. UNLO						
AD REQUIRED.'	T	RMK_SPECSTOR				
' SCHEDULER						
STATE'	T	RMK_STATE				
'NO STORAGE						
OF BLOCK BIT'	T	RMK_STORNOT				

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VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CIPL	W77D
"	T	RMK_STUFF				
' ACTIVE OR						
DONE FLAG'	T	RMK_STUS				
"	T	RMK_TIM				
' TIMING FLA						
G'	T	RMK_TIMING				
' TIMING CON						
STANTS'	T	RMK_TIMKON				
"	T	RMK_TOR				
' READ TRACK						
"	T	RMK_TR				
' TEMPORARY						
STORE FLAG,						
4K BLOCK IS						
NOT WRITE PR						
OTECTED'	T	RMK_TSFLG				
' BSCHED TU						
OOS'	T	RMK_TUOOS				
"	T	RMK_TUR				
"	T	RMK_UNST				
' VERIFY TRA						
CK NUMBER.'	T	RMK_VERT				
"	T	RMK_WENBL				
'CHECKSUM IN						
FO. CHANGING						
. (XLATE BEI						
NG WRITTEN)'	T	RMK_WOPEN				
' LENGTH OF						
SPECIFIC PAT						
CH'	T	RMK_WRDLENGT				
	H					
0011536 L	RON	42-25	42-21			
0011767 L	RPCK	46-31	32-43, 46-49, 54-08, 54-30, 58-05			
0013363 L	RTNBSCH	67-45	67-42			
O R RO						
		LIBNUM=3				
		13-01, 14-10, 14-14, 14-33, 14-36, 14-37, 15-11, 15-12, 15-29, 18-09, 18-10,				
		18-19, 18-31, 18-34, 18-35, 21-12, 21-13, 21-14, 21-16, 21-17, 21-19, 21-20, 21-21, 21-26,				
		21-29, 21-33, 21-36, 21-48, 21-49, 22-47, 23-09, 23-10, 23-49, 24-13, 24-14, 24-15, 24-33,				
		25-13, 25-19, 25-20, 25-23, 25-29, 25-48, 26-01, 27-17, 27-18, 28-42, 28-45, 28-46, 29-02,				
		29-04, 29-08, 29-13, 29-14, 29-24, 29-25, 29-26, 29-28, 29-31, 31-15, 31-16, 31-32, 32-41,				
		32-42, 32-46, 33-02, 33-03, 33-12, 33-13, 34-29, 34-30, 34-34, 34-35, 35-02, 35-03, 35-05,				
		35-13, 35-34, 35-35, 35-39, 35-40, 35-46, 35-48, 36-02, 36-09, 36-10, 36-48, 37-01, 37-03,				
		37-19, 37-20, 37-33, 37-35, 37-36, 37-37, 37-38, 37-41, 37-42, 37-48, 38-31, 38-32, 38-35,				
		38-42, 38-43, 39-20, 39-22, 39-27, 40-05, 40-06, 40-09, 40-10, 40-23, 41-06, 41-07, 41-12,				
		41-13, 41-17, 41-46, 42-08, 42-26, 42-27, 42-32, 43-01, 43-09, 43-10, 43-12, 43-13, 43-15,				
		43-19, 43-21, 44-24, 44-32, 44-35, 44-37, 45-18, 45-19, 45-29, 46-27, 46-38, 46-40, 47-01,				
		47-38, 47-40, 49-34, 49-35, 50-22, 50-23, 50-44, 51-08, 51-09, 51-14, 51-15, 51-18, 51-19,				
		52-16, 52-17, 53-04, 53-18, 53-19, 53-31, 53-34, 53-37, 54-06, 54-07, 54-09, 54-11, 54-28,				
		54-29, 54-32, 54-33, 54-36, 54-47, 55-01, 55-43, 55-44, 56-12, 56-13, 56-15, 56-18, 56-23,				
		56-31, 57-20, 57-21, 57-22, 57-23, 57-30, 57-31, 58-03, 58-04, 58-06, 58-38, 58-39, 59-14,				

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VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CIPL	W77D
				59-15, 60-14, 60-17, 60-35, 60-37, 60-38, 60-39, 60-40, 60-41, 61-21, 61-24, 61-25, 61-29, 61-42, 61-44, 62-05, 62-11, 62-12, 63-08, 63-09, 63-15, 63-17, 63-32, 63-36, 64-17, 64-30, 64-32, 64-42, 65-17, 65-18, 65-34, 65-35, 66-04, 66-06, 66-07, 66-09, 66-10, 66-25, 66-28, 66-30, 66-31, 66-34, 66-44, 66-46, 67-03, 67-04, 67-07, 67-08, 67-09, 67-11, 67-14, 67-17, 67-18, 67-19, 67-25, 67-35, 67-36, 67-37, 67-38, 67-40, 67-41, 67-46, 69-18, 69-19, 69-20, 70-17, 70-20, 70-26, 70-27		
0000123	A	ROXF		LIBNUM=10		
	1	R	R1	LIBNUM=3		
				14-09, 14-26, 14-29, 15-17, 16-06, 16-08, 16-10, 18-09, 19-24, 20-08, 20-10, 21-11, 21-18, 21-20, 21-23, 21-28, 21-29, 21-30, 21-31, 21-35, 21-36, 21-37, 21-38, 21-39, 21-40, 21-42, 21-46, 23-07, 23-08, 25-24, 25-28, 25-29, 28-43, 28-44, 29-27, 29-28, 29-29, 29-30, 29-31, 29-32, 34-31, 35-04, 36-01, 36-08, 36-10, 36-11, 36-49, 37-02, 37-03, 37-11, 37-12, 37-24, 37-25, 37-26, 37-28, 37-33, 37-38, 38-33, 38-34, 38-35, 45-06, 45-07, 45-08, 45-20, 45-45, 45-48, 45-49, 46-01, 46-11, 46-12, 46-17, 46-22, 48-33, 48-34, 48-35, 48-37, 49-04, 49-05, 51-21, 51-22, 51-23, 53-10, 53-11, 53-12, 53-20, 53-36, 53-43, 53-45, 54-18, 54-19, 57-12, 57-13, 58-46, 58-48, 58-49, 59-04, 59-05, 59-07, 59-08, 59-09, 59-16, 60-19, 61-18, 61-28, 61-47, 61-48, 62-01, 62-02, 62-06, 62-08, 62-20, 62-21, 63-17, 63-20, 63-21, 63-23, 63-29, 64-02, 64-05, 64-06, 64-08, 64-15, 64-34, 64-35, 64-39, 65-36, 65-41, 66-04, 66-18, 66-22, 66-28, 70-17, 70-20, 70-23, 70-24, 70-25, 70-26		
	12	R	R10	LIBNUM=3		
				13-08, 14-21, 15-32, 15-37, 15-39, 15-42, 15-47, 16-11, 16-18, 16-21, 16-24, 16-33, 16-36, 18-26, 18-40, 19-29, 19-35, 19-38, 19-42, 19-48, 20-11, 20-18, 20-21, 20-25, 20-34, 20-37, 22-06, 23-18, 23-27, 23-37, 23-47, 25-38, 25-41, 26-26, 29-06, 29-11, 29-22, 29-42, 37-27, 37-28, 38-01, 38-36, 38-38, 39-17, 40-04, 40-06, 40-18, 40-42, 40-49, 41-05, 41-07, 42-02, 42-17, 42-42, 43-03, 43-06, 43-16, 43-26, 44-02, 44-09, 44-48, 46-32, 47-32, 60-26		
	13	R	R11	LIBNUM=3		
				13-09, 15-35, 15-45, 16-27, 19-33, 19-46, 20-29, 23-34, 23-48, 25-39, 25-42, 27-11, 27-12, 29-17, 40-21, 40-45, 42-05, 42-20, 42-45, 43-24		
	14	R	R12	LIBNUM=3		
				31-21, 45-15, 45-18, 45-30, 50-29, 55-49, 59-12, 59-14, 67-27		
	15	R	R13	LIBNUM=3		
				31-22, 45-17, 45-31, 50-30, 56-01, 59-13, 67-28		
	16	R	R14	LIBNUM=3		
				14-43, 14-45, 18-47, 18-49, 31-18, 43-31, 45-28, 50-26, 55-46, 61-19, 68-02		
	17	R	R15	LIBNUM=3		
				14-44, 18-48, 26-22, 31-19, 43-32, 45-27, 50-27, 55-47, 61-20, 68-03		
	2	R	R2	LIBNUM=3		
				13-02, 14-28, 14-33, 14-34, 14-35, 14-37, 14-40, 15-18, 16-19, 16-34, 18-31, 18-32, 18-33, 18-35, 18-37, 18-38, 19-25, 20-19, 20-35, 21-21, 21-22, 21-24, 21-25, 24-40, 25-04, 25-23, 25-45, 29-39, 29-40, 30-08, 30-10, 31-17, 31-20, 32-02, 34-28, 34-35, 35-32, 35-41, 36-12, 43-10, 43-11, 43-15, 43-29, 43-33, 44-46, 45-47, 46-01, 48-18, 48-29, 48-31, 48-36, 48-37, 50-28, 51-29, 51-30, 53-22, 53-24, 53-44, 55-45, 55-48, 56-37, 66-09, 66-19, 66-27, 66-31		
	3	R	R3	LIBNUM=3		
				13-03, 14-15, 14-20, 15-28, 16-14, 16-17, 16-29, 16-32, 18-20, 18-25, 18-42, 18-43, 19-15, 19-20, 20-14, 20-17, 20-31, 20-33, 29-38, 30-06, 30-07, 34-32, 35-45, 35-46, 35-47, 40-47, 40-48, 44-03, 44-05, 44-15, 44-16, 45-26, 45-32, 45-36, 47-13, 47-16, 47-21, 48-02, 48-23, 48-24, 48-25, 48-31, 48-41, 48-42, 49-02, 53-21, 53-31, 53-32, 53-33, 59-26, 59-27, 59-28, 61-34, 61-35, 61-37, 61-46, 62-07, 62-18, 62-28, 62-44, 63-31, 64-02, 64-17, 64-41, 64-43, 65-02, 65-04, 65-14, 65-15		
	4	R	R4	LIBNUM=3		
				13-04, 15-41, 15-46, 19-41, 19-47, 25-04, 25-10, 25-13, 25-15, 29-48, 30-01, 30-03, 30-05, 30-06, 43-14, 43-25, 47-46, 47-48, 48-01, 48-02, 62-14, 62-29, 62-40, 63-38, 63-39, 64-23, 65-08		
	5	R	R5	LIBNUM=3		
				13-05, 14-41, 14-47, 15-06, 15-13, 18-45, 19-02, 19-10, 19-21, 23-46, 26-44, 27-01, 29-49, 30-02, 30-04, 30-05, 47-15, 47-21, 47-47, 47-48, 48-04, 63-02, 63-07, 63-32, 63-33, 63-34, 63-35, 64-29, 64-30, 64-31, 64-32, 64-33, 64-35, 64-41, 64-42, 65-02, 65-04, 65-06, 65-07, 65-33, 66-02, 66-30		

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VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CIPL	W77D
0010662	L	R5CHK	26-43	24-35		
6	R	R6		LIBNUM=3 13-06, 14-45, 14-46, 15-05, 18-49, 19-01, 19-09, 24-38, 24-40, 24-44, 25-01, 25-19, 25-31, 25-40, 47-16, 47-17, 47-18, 63-03, 64-34, 65-06, 65-14		
0000143	A	R6XF		LIBNUM=10 63-06		
7	R	R7		LIBNUM=3 13-07, 24-39, 25-28, 26-03, 26-05		
10	R	R8		LIBNUM=3 23-24, 23-26, 23-29, 23-31, 35-23, 35-26, 54-39, 54-40, 56-10, 56-16, 56-25, 57-33, 57-34, 57-36, 58-09, 58-10, 58-12, 58-15		
11	R	R9		LIBNUM=3 4-26, 4-27, 4-28, 4-29, 21-40, 21-45, 22-46, 23-01, 23-11, 23-14, 23-17, 23-36, 23-44, 23-45, 24-15, 24-34, 24-41, 24-43, 25-25, 25-32, 26-25, 27-02, 27-03, 27-09, 29-05, 29-41, 31-28, 33-05, 33-06, 35-24, 35-26, 35-27, 35-37, 35-38, 50-41, 52-19, 52-20, 54-13, 54-14, 54-16, 54-31, 54-35, 56-07, 56-08, 56-11, 56-16, 56-25, 56-27, 57-34, 57-36, 57-38, 57-41, 58-10, 58-14, 58-15, 59-43, 60-27, 60-29, 67-18, 67-19, 67-21, 67-23		
0013064	L	SAVEINFO	62-27	64-24, 65-09		
0013362	L	SBK	67-43	67-39		
0011441	L	SCANSTP	40-15	32-08, 51-41		
0000003	A	SCHCON1	6-23	W=1 S=16 N=3 CL=3 37-17, 46-11, 46-17, 50-37, 51-03, 51-13, 61-22, 61-27		
0000003	A	SCHCON2	6-24	W=1 S=17 N=3 CL=3 46-11, 46-17, 62-31, 63-35, 63-36		
0013305	L	SCHLOOK	67-02	42-24, 66-48		
0000005	A	SCNSTP		LIBNUM=6 40-09		
0	R	SCRTCH	13-01			
0100007	A	SD		LIBNUM=6 15-42, 19-42, 43-16		
0000344	A	SDR1XT		LIBNUM=10 63-06		
'+19'	T	SEGN0		W=14 S=4 N=23 CL=2 62-12		
0000757	A	SERNO_049252	75-26			
0000763	A	SERNO_050340	76-02			
0000753	A	SERNO_061983	75-13			
0000747	A	SERNO_062873	75-02			
0011420	L	SETIME	39-23	49-08		
0012127	L	SETIMEL	49-07	48-43		
0011417	L	SETIMEST	39-21	40-11, 40-24		
0010077	L	SETNEWUP	15-27	16-39		
0011225	L	SETRK	35-29	35-18, 35-20		
0012326	L	SETTRK	53-09	52-47		
0011011	L	SKIPBELLRING	29-47	29-45		
0010531	L	SKIPCRITALM	23-23	23-21		
0011035	L	SKIPLOADDB	30-19	30-14		
0010520	L	SKIPOFLSETUP	23-13	23-05		
0010662	L	SKIPRESETPT	26-42	26-08		
0010556	L	SKIPTTYCINIT	23-42	23-40		
0013552	L	SKIPWRD	74-10	62-02, 63-15, 63-23, 63-34, 65-07, 65-15		
0011274	L	SLOWPOS	36-45	32-05, 51-35		
0000003	A	SPECSTOR	6-20	W=1 S=13 N=3 CL=3 45-12, 57-09, 59-10		
0013366	L	SPECUNL	68-01	45-13, 59-11		
CBLM	V	SSPAB1	11-25	23-27		
CBLM	V	SSPIOADR	11-26	23-17		
0013545	L	SSPSV	74-01	12-11, 23-34, 27-11		
0010007	A	SST		LIBNUM=6 16-24, 20-25, 42-17		
0010004	L	START	14-07			
0024000	L	STARTCLRBLK	74-31			

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VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CIPL	W770
0000000	A	STATE	6-03	W=5 S=0 N=0 CL=3 12-12, 35-41, 37-20, 37-42, 38-43, 39-22, 40-10, 41-13, 41-46, 42-27, 44-37, 46-12, 48-23, 48-42, 49-35, 51-15, 51-18, 59-28, 60-38, 67-07		
0013532	L	STATOFF	73-23	35-34, 35-40, 56-15, 57-20, 57-22		
0013523	L	STATON	73-07	56-12, 67-40		
	R	STATUSR	13-09			
0013157	L	STEXT	64-07	64-16		
0012035	L	STOPSW	47-31	47-26		
0011024	L	STORECNT	30-09	29-40		
0000003	A	STORNOT	6-19	W=1 S=12 N=3 CL=3 41-10, 44-29, 45-09, 45-33, 45-37, 47-08		
0013076	L	STORPAT	62-39	62-22, 63-44		
0011662	L	STOSUB	44-36	32-47, 44-33, 46-30, 46-41, 47-02, 47-41		
0010142	L	STPT	16-16	16-17		
0010355	L	STPT2	20-16	20-17		
0012617	L	STREA	57-37	57-42		
0011476	L	STREAD	41-11	37-31, 48-20		
0011322	L	STREAD1	37-23	12-17, 32-13, 37-08, 52-02		
0013335	L	STR9	67-22	67-20		
0000000	A	STUFF	5-10	W=1 S=14 N=0 CL=3		
0000003	A	STUS	6-15	W=1 S=6 N=3 CL=3 33-02, 33-03, 34-26, 35-33, 52-16, 52-17, 52-42, 53-25, 54-48, 56-13, 56-18, 56-23, 57-23, 57-30, 57-31, 58-07, 67-41		
0013243	L	SUBIT	66-03	66-01		
0000000	A	SV_REG				
0010161	L	SVNTY	16-31	16-32		
0010376	L	SVNTY2	20-32	20-33		
CTSD	V	SYSTM	11-31	18-02, 23-45		
0000211	A	SYSTMDFS	18-01	12-18		
0006415	A	TBS		LIBNUM=6 16-18, 20-18, 38-01, 40-04		
0013557	L	TEMPAD	74-18	50-24, 50-25		
0024000	L	TEMPIO1	74-29	74-19		
0002415	A	TFF		LIBNUM=6 38-36, 60-26		
0004415	A	TFR		LIBNUM=6 38-38		
0000000	A	TIM	4-09	W=1 S=12 N=0 CL=3 40-21, 42-05		
CSYSUB	V	TIMCHK	11-44	70-30, 70-31		
0013403	L	TIMCHKALT	70-15	31-34, 42-10, 50-46, 56-33		
0013417	L	TIMCHKGO	70-28	70-21		
0013534	D	TIMEOFF	73-27			
0013525	D	TIMEON	73-11			
0000003	A	TIMING	6-17	W=1 S=10 N=3 CL=3 12-20, 31-29, 31-36, 37-49, 38-44, 39-28, 44-25, 46-39, 47-39, 50-42, 50-48, 52-49, 56-29, 56-35, 60-36		
0000005	A	TIMKON	6-30	W=20 S=0 N=5 CL=3 12-19, 31-32, 37-48, 39-27, 41-17, 42-08, 42-32, 43-01, 44-24, 46-38, 47-38, 50-44, 53-04, 56-31, 60-35, 66-34		
CSYSUB	V	TIMOUT	11-45	37-46, 39-25, 41-15, 42-29, 42-30, 42-48, 44-22, 46-35, 46-36, 47-36, 53-02, 60-32, 60-33,		
CSYSUB	V	TIMOUTX	11-46	66-33		
0000013	A	TMCHECK		LIBNUM=6 41-12		
0000000	A	TOR	4-08	W=1 S=11 N=0 CL=3		
0011520	L	TOUTCHK	42-07	42-46		
0000001	A	TR	6-07	W=2 S=14 N=1 CL=3 12-13, 16-21, 16-36, 20-21, 20-37, 21-24, 35-30, 37-26, 37-28, 45-47, 48-36, 48-37, 49-04, 53-05, 53-10, 53-11, 58-48		

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VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CIPL	W77D
0000747	A	TR_011428	75-02			
0000753	A	TR_012432	75-13			
0000757	A	TR_013299	75-26			
0000763	A	TR_013712	76-02			
0000417	A	TR_11428	15-20			
0000607	A	TR_12432	24-02	24-13, 26-10, 26-20, 44-11		
0000425	A	TR_13299	17-23	17-34		
0000676	A	TR_13712	34-38	35-02, 46-14, 55-04, 59-33, 59-43, 60-43, 65-38		
0003415	A	TRB		LIBNUM=6 41-05		
0000000	A	TRCK		W=2 S=13 N=0 CL=3 LIBNUM=6 16-19, 16-34, 20-19, 20-35		
	R	TRIGREG	13-06			
0013236	L	TRORG	15-20	17-23, 17-34, 24-02, 26-10, 34-38, 44-11, 46-14, 55-04, 59-33, 60-43, 65-38		
0007415	A	TRT		LIBNUM=6 16-33, 20-34, 22-06, 37-27		
0000005	A	TSFLG	7-15	W=1 S=17 N=5 CL=3 12-14, 25-01, 25-19, 35-48, 53-34		
0002015	A	TSTAT		LIBNUM=6 14-21, 18-26, 29-11, 40-18, 40-42, 42-02, 44-02		
0000015	A	TSTOP		LIBNUM=6 39-17, 44-48		
0000207	A	TTY_BEL	7-46	26-26		
0010751	L	TUOF00S	29-20	29-10, 29-16		
0000003	A	TU00S	6-16	W=1 S=7 N=3 CL=3 28-44, 28-48, 28-49, 29-21, 35-19, 35-35, 35-39, 37-15, 50-35, 51-19, 52-44, 57-21, 67-44		
0000000	A	TUR	4-06	W=1 S=7 N=0 CL=3 29-17		
0016320	A	TU0ADR		LIBNUM=6 21-39, 60-27		
0016340	A	TU1ADR		LIBNUM=6 21-42, 60-29		
0012212	L	UNITOK	51-17	51-10		
0013516	L	UNLSPEC	72-44	12-21, 68-02, 68-03		
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0000000	A	UNST	5-09	W=1 S=13 N=0 CL=3		
0011216	L	USEB	35-22			
0012644	L	USEBUSE	58-13	58-11		
0000015	A	VERCONT		LIBNUM=6 32-46		
0011750	L	VERECFAL	46-07	46-02, 48-03, 48-39		
0000014	A	VERFALST		LIBNUM=6 46-27		
0011426	L	VERIT	40-01	32-07, 51-24, 51-39, 59-46		
0012051	L	VERRECHK	47-45	47-20		
0012015	L	VERRTN	47-12	47-09		
0000004	A	VERSTATE		LIBNUM=6 37-41, 39-20		
0012351	L	VERSUM	53-30	53-24		
0000003	A	VERT	6-22	W=2 S=14 N=3 CL=3 21-25, 40-05, 40-06, 41-06, 41-07, 45-45, 45-48, 45-49, 46-01, 47-46, 47-48, 48-04, 48-33, 48-34, 48-35, 49-05, 53-06, 53-12		
0012737	L	WASASCH	60-18	60-16		
0000000	A	WENBL	4-05	W=1 S=6 N=0 CL=3		
0000000	A	WOPEN	7-05	W=1 S=17 N=0 CL=3 28-45, 28-46, 37-09		
	R	WORDCNT	13-03	W=3 S=0 N=0 CL=2 LIBNUM=6		
0010615	L	WORDOK	25-14	25-05, 25-12		
0010636	L	WORKTABLE	25-37	24-42		
0000100	A	WRDBUF		LIBNUM=6 15-41, 19-41, 43-14		
'+18'	T	WRDLENGTH		W=20 S=0 N=22 CL=2 62-05		
0010121	L	WRDMORE	15-43	15-46		
0010334	L	WRDMORE2	19-43	19-47		

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VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CIPL	W77D
0012260	L	XAVERREC	52-05	57-01		
0012252	L	XBCKRECV1	51-48	56-47		
0011752	L	XCHKCLN	46-10	46-47		
0012256	L	XCHKTIM	52-03	56-49		
0012232	L	XFASTPOS	51-32	52-21, 56-39		
0012236	L	XFSTOPTST	51-36	56-41		
0011315	L	XLATEOK	37-16	37-10, 37-13		
0013505	L	XLAT4KNO	72-26	29-30		
0012250	L	XREADON	51-46	56-46		
0012244	L	XREDVER	51-42	56-44		
0012246	L	XREEVAL	51-44	56-45		
0012242	L	XSCANSTP	51-40	56-43		
0012234	L	XSLOWPOS	51-34	56-40		
0012254	L	XSTREAD1	52-01	56-48		
0012240	L	XVERIT	51-38	54-22, 56-42		
0013010	L	YESDONE	61-30	61-23		
0010034	L	YESIN	14-32	14-27		
0134350	A	ZPTX		LIBNUM=10 14-19, 18-24		
0010073	L	ZROER	15-16	14-30, 14-48, 15-07		
0010307	L	ZROER2	19-23	19-03, 19-11		
0010014	L	ZRPT	14-16	15-30, 15-49		
0012070	L	ZRSTATE	48-22	45-38, 48-19		
0013163	L	ZRT	64-14	64-04		
1	J	3ACC	1-09			

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COUNT	T	NAME	DEF/REF	REFERENCES	CIPL	W77D
5	0	AI	LIBNUM=1	36-01, 45-48, 48-34, 53-36, 66-22		
16	0	AN	LIBNUM=1	14-36, 18-34, 25-47, 35-45, 43-12, 45-07, 47-17, 48-25, 53-32, 59-08, 63-21,		
			64-06, 64-33,	66-07, 66-27, 70-27		
7	0	AR	LIBNUM=1	21-29, 25-45, 29-28, 36-10, 64-32, 66-31, 70-26		
3	0	A1S	LIBNUM=1	32-44, 35-21, 67-06		
106	0	B	LIBNUM=1	14-30, 15-08, 15-30, 15-49, 16-39, 18-11, 18-12, 18-13, 18-14, 19-12, 19-27,		
			20-02, 20-41,	22-11, 24-35, 25-05, 32-03, 32-04, 32-05, 32-06, 32-07, 32-08, 32-09, 32-10,		
			32-11, 32-12,	32-13, 32-14, 32-15, 32-16, 32-17, 32-18, 32-19, 32-20, 33-07, 34-24, 36-15,		
			37-21, 37-31,	38-05, 38-45, 39-29, 40-11, 40-24, 41-03, 41-18, 41-47, 42-12, 42-33, 44-33,		
			44-38, 45-38,	46-03, 46-25, 46-41, 47-02, 47-27, 47-41, 48-05, 48-20, 48-43, 51-16, 52-11,		
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82	0	BC	LIBNUM=1	14-27, 15-02, 15-07, 16-09, 16-20, 16-35, 19-06, 19-11, 20-09, 20-20, 20-36,		
			22-49, 23-21,	23-40, 24-42, 25-30, 26-08, 27-10, 29-18, 29-45, 30-14, 31-26, 31-35, 34-27,		
			35-49, 38-37,	40-22, 42-06, 42-21, 44-07, 44-27, 44-30, 45-05, 45-10, 45-44, 46-02, 46-47,		
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6	0	BCL	LIBNUM=1	15-23, 45-13, 56-34, 59-11, 59-31, 59-45		
50	0	BL	LIBNUM=1	22-01, 24-07, 24-19, 26-14, 26-31, 32-25, 32-27, 32-29, 32-31, 32-33, 32-35,		
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			51-33, 51-35,	51-37, 51-39, 51-41, 51-43, 51-45, 51-47, 51-49, 52-02, 52-04, 52-06, 52-07,		
			52-08, 52-09,	52-10, 53-49, 55-13, 57-18, 57-25, 57-39, 59-37, 59-46, 59-48, 61-01, 62-35,		
90	0	BNC	LIBNUM=1	14-01, 14-25, 14-38, 14-48, 15-36, 16-07, 16-28, 18-30, 18-36, 18-39, 19-03,		
			19-26, 19-34,	20-30, 21-41, 22-10, 23-05, 23-33, 25-03, 25-12, 25-22, 25-46, 26-02, 26-23,		
			27-04, 27-13,	28-47, 29-10, 29-16, 31-24, 31-31, 33-04, 34-22, 34-36, 35-18, 35-20, 35-36,		
			36-03, 36-14,	37-04, 37-08, 37-10, 37-13, 37-34, 37-40, 40-46, 42-11, 42-46, 43-23, 43-30,		
			44-47, 45-34,	46-09, 46-30, 47-09, 47-20, 47-23, 48-28, 50-32, 50-36, 50-38, 50-43, 52-18,		
			52-38, 53-38,	54-37, 54-49, 56-03, 56-05, 56-09, 56-14, 56-17, 56-30, 57-15, 57-32, 58-11,		
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12	0	BNCL	LIBNUM=1	27-16, 32-43, 53-48, 54-08, 54-12, 54-30, 56-20, 57-11, 57-24, 58-05, 58-08,		
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5	0	BPAX	LIBNUM=1	18-10, 32-02, 33-13, 51-30, 56-37		
1	0	BR	LIBNUM=1	68-04		
60	0	BSA	LIBNUM=1	19-32, 19-37, 19-40, 19-45, 20-01, 20-24, 20-28, 20-40, 23-04, 23-20, 23-39,		
			24-17, 25-27,	26-07, 26-21, 27-15, 29-44, 30-13, 30-16, 30-18, 31-34, 37-30, 37-46, 38-03,		
			38-30, 38-41,	39-19, 39-25, 40-08, 40-20, 40-44, 41-02, 41-09, 41-15, 41-45, 42-04, 42-10,		
			42-19, 42-24,	42-30, 42-44, 42-48, 43-05, 43-08, 43-28, 44-22, 45-02, 45-24, 46-36, 47-34,		
			47-36, 50-46,	53-02, 56-33, 58-36, 59-20, 60-33, 66-33, 70-19, 70-31		
8	0	BSAI	LIBNUM=1	15-34, 15-38, 15-40, 15-44, 15-48, 16-23, 16-26, 16-38		
3	0	BTSAG	LIBNUM=1	14-03, 67-30, 70-33		
1	0	BTSAG	LIBNUM=1	69-22		
2	0	BTSAGN	LIBNUM=1	66-14, 66-36		
1	0	BTSAN	LIBNUM=1	67-01		
29	0	BX	LIBNUM=1	14-20, 15-05, 15-13, 15-46, 16-17, 16-32, 18-25, 18-43, 19-09, 19-21, 19-47,		

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5	0	CIRM	LIBNUM=1	43-29, 61-37, 67-09		
3	0	COM	LIBNUM=1	16-27, 20-29, 26-22, 42-20, 61-44		
8	0	CR	LIBNUM=1	63-20, 64-05, 66-06		
7	0	CRM	LIBNUM=1	21-40, 34-35, 37-03, 56-16, 57-34, 58-10, 65-02, 67-18		
8	0	EXR	LIBNUM=1	37-38, 46-01, 47-21, 47-48, 48-02, 48-31, 48-37		
1	0	FLZ	LIBNUM=1	25-38, 25-39, 25-41, 25-42, 45-21, 45-22, 59-17, 59-18		
1	0	GA	LIBNUM=1	18-09		
21	0	GN	LIBNUM=1	26-28		
5	0	HA	LIBNUM=1	23-44, 43-31, 43-32, 45-27, 45-28, 45-30, 45-31, 54-20, 54-21, 59-02, 59-03, 59-22, 59-23, 59-24, 59-25, 61-19, 61-20, 62-25, 62-26, 62-41, 62-42		
2	0	HALT	LIBNUM=1	14-23, 18-28, 26-24, 65-32, 69-17		
15	0	HN	LIBNUM=1	27-19, 58-40		
3	0	ICF	LIBNUM=1	23-14, 31-18, 31-19, 31-21, 31-22, 50-26, 50-27, 50-29, 50-30, 55-46, 55-47, 55-49, 56-01, 67-27, 67-28		
3	0	IRM	LIBNUM=1	23-11, 24-34, 24-44		
60	0	L	LIBNUM=1	37-28, 40-06, 41-07		
			LIBNUM=1	14-40, 14-43, 18-37, 18-47, 21-14, 21-37, 29-39, 29-48, 29-49, 31-28, 31-32, 35-37, 36-48, 36-49, 37-26, 37-35, 38-31, 38-33, 40-05, 41-06, 42-08, 43-09, 43-33, 45-06, 45-15, 45-17, 45-45, 45-47, 47-13, 47-15, 47-46, 48-01, 48-24, 48-29, 48-33, 48-36, 49-04, 50-41, 50-44, 54-18, 54-39, 56-07, 56-31, 57-12, 58-09, 59-04, 59-07, 59-12, 59-13, 59-43, 61-24, 61-34, 61-42, 62-11, 62-14, 62-15, 63-02, 64-29, 65-34, 65-36		
22	0	LA	LIBNUM=1	14-44, 15-11, 18-48, 19-15, 21-17, 21-35, 24-38, 24-39, 27-01, 34-30, 45-20, 45-29, 53-19, 59-16, 60-19, 61-21, 61-29, 62-05, 62-16, 63-03, 63-08, 63-09		
27	0	LAL	LIBNUM=1	14-34, 18-19, 18-32, 21-12, 21-13, 21-31, 23-46, 23-49, 28-43, 28-44, 29-38, 31-17, 31-20, 34-29, 50-28, 53-18, 54-09, 54-47, 55-01, 55-45, 55-48, 58-06, 58-46, 60-14, 60-17, 67-25, 67-46		
5	0	LAX	LIBNUM=1	21-36, 43-15, 63-32, 64-17, 64-42		
89	0	LI	LIBNUM=1	14-10, 14-21, 14-41, 15-37, 15-39, 15-41, 15-42, 15-47, 16-11, 16-18, 16-24, 16-33, 18-26, 18-40, 18-45, 19-35, 19-38, 19-41, 19-42, 19-48, 20-11, 20-18, 20-25, 20-34, 21-39, 21-42, 22-06, 23-17, 23-18, 23-27, 23-36, 23-37, 26-25, 26-26, 29-04, 29-06, 29-11, 29-24, 29-41, 29-42, 30-08, 32-46, 35-04, 37-27, 37-41, 38-01, 38-36, 38-38, 38-42, 39-17, 39-20, 40-04, 40-09, 40-18, 40-42, 40-49, 41-05, 41-12, 42-02, 42-17, 42-26, 42-42, 43-03, 43-06, 43-14, 43-16, 43-26, 44-02, 44-09, 45-36, 46-11, 46-27, 46-32, 46-40, 47-01, 47-32, 47-40, 48-41, 49-34, 53-10, 60-26, 60-27, 60-29, 60-37, 60-39, 61-18, 66-02, 66-25, 70-23		
68	0	LL	LIBNUM=1	14-28, 21-19, 21-26, 21-28, 23-09, 25-24, 27-11, 28-42, 29-05, 29-26, 29-27, 29-30, 32-41, 33-02, 33-05, 33-12, 34-28, 34-31, 34-32, 34-34, 35-02, 35-05, 35-23, 35-34, 36-09, 37-11, 50-24, 50-25, 51-08, 51-18, 51-21, 52-16, 52-19, 53-20, 53-21, 53-22, 54-06, 54-14, 54-28, 54-31, 54-32, 54-35, 54-36, 56-10, 56-11, 56-12, 56-15, 57-20, 57-30, 57-33, 57-41, 58-03, 58-12, 63-15, 63-31, 63-38, 63-42, 63-43, 67-03, 67-08, 67-17, 67-21, 67-35, 67-37, 67-40, 68-02, 68-03, 69-18		
23	0	LN	LIBNUM=1	14-15, 15-28, 15-32, 18-20, 19-29, 21-11, 21-48, 23-07, 23-24, 23-29, 27-17, 29-13, 31-15, 40-23, 43-19, 44-03, 44-32, 44-35, 44-48, 50-22, 58-38, 62-01, 66-44		
19	0	LR	LIBNUM=1	23-47, 23-48, 24-15, 24-26, 25-04, 25-23, 30-06, 35-26, 47-16, 56-25, 57-36, 58-15, 64-30, 64-34, 66-09, 66-30, 67-19, 70-17, 70-20		
12	0	LRM	LIBNUM=1	14-33, 14-45, 18-31, 18-49, 21-20, 21-21, 24-40, 25-19, 25-48, 43-10, 45-18, 59-14		

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1	0	LSR	LIBNUM=1	23-08		
2	0	LX	LIBNUM=1	35-46, 53-31		
4	0	MIS	LIBNUM=1	14-12, 14-18, 18-23, 63-05		
12	0	NI	LIBNUM=1	14-35, 18-33, 27-12, 37-01, 37-02, 38-32, 38-34, 58-48, 62-12, 65-35, 65-41, 69-20		
2	0	OI	LIBNUM=1	23-01, 70-25		
2	0	OR	LIBNUM=1	25-29, 30-05		
1	0	PACK	LIBNUM=1	30-11		
7	0	RLN	LIBNUM=1	21-22, 21-33, 30-01, 43-11, 47-47, 51-29, 64-31		
6	0	RRN	LIBNUM=1	14-46, 19-01, 30-02, 45-19, 59-15, 70-24		
15	0	SBN	LIBNUM=1	14-29, 16-10, 16-14, 16-21, 16-29, 16-36, 18-42, 20-10, 20-14, 20-21, 20-31, 20-37, 25-31, 25-32, 27-03		
43	0	SBS	LIBNUM=1	28-48, 28-49, 29-03, 29-21, 34-23, 35-30, 35-33, 37-15, 37-17, 37-43, 37-49, 38-44, 39-28, 41-10, 44-25, 44-28, 44-31, 46-39, 47-39, 48-38, 49-03, 50-39, 51-07, 51-13, 52-39, 52-48, 52-49, 53-05, 53-06, 53-25, 54-10, 54-17, 55-08, 57-09, 57-16, 60-36, 61-27, 61-39, 62-30, 62-31, 64-09, 65-16, 67-44		
2	0	SI	LIBNUM=1	51-22, 66-10		
4	0	SIO	LIBNUM=1	23-22, 23-28, 26-27, 29-46		
17	0	SMIO	LIBNUM=1	13-47, 14-22, 16-12, 18-27, 18-41, 20-12, 22-07, 23-41, 29-07, 29-12, 43-18, 44-04, 44-14, 46-33, 60-28, 60-30, 66-43		
14	0	SN	LIBNUM=1	14-47, 15-01, 15-03, 19-02, 19-05, 19-07, 37-36, 61-28, 61-46, 61-47, 62-06, 62-07, 62-18, 62-20		
14	0	SR	LIBNUM=1	14-37, 18-35, 29-31, 37-33, 38-35, 63-17, 64-02, 64-35, 64-41, 65-04, 65-06, 65-14, 66-04, 66-28		
52	0	ST	LIBNUM=1	21-38, 29-02, 30-03, 30-04, 30-07, 30-10, 33-06, 35-27, 35-41, 37-20, 37-37, 37-42, 37-48, 38-43, 39-22, 39-27, 40-10, 41-13, 41-17, 41-46, 42-27, 42-32, 43-01, 43-13, 44-24, 44-37, 46-22, 46-38, 47-38, 48-23, 48-42, 49-35, 51-15, 52-20, 53-04, 53-45, 54-13, 54-16, 54-40, 56-27, 57-38, 58-14, 58-49, 59-05, 59-28, 60-35, 60-38, 63-07, 66-34, 67-07, 67-14, 67-36		
8	0	STA	LIBNUM=1	15-12, 15-45, 19-20, 19-46, 21-16, 25-40, 40-48, 43-24		
1	0	STAF	LIBNUM=1	19-17		
1	0	STAFX	LIBNUM=1	25-10		
2	0	STAL	LIBNUM=1	14-14, 15-29		
45	0	STL	LIBNUM=1	21-23, 21-24, 21-25, 21-30, 21-45, 21-46, 21-49, 23-34, 23-45, 24-14, 26-05, 27-18, 29-22, 29-25, 29-29, 29-32, 31-16, 35-03, 35-24, 35-38, 35-40, 35-47, 36-08, 36-12, 50-23, 53-33, 53-43, 53-44, 55-44, 57-22, 58-39, 60-40, 60-41, 62-02, 62-23, 62-24, 62-28, 62-29, 63-23, 63-34, 64-08, 65-07, 65-15, 65-18, 67-23		
21	0	STM	LIBNUM=1	36-11, 37-25, 44-16, 45-08, 45-32, 45-49, 46-12, 46-17, 47-18, 48-04, 48-35, 49-02, 49-05, 51-23, 53-11, 53-12, 54-19, 57-13, 59-09, 59-27, 63-35		
1	0	STX	LIBNUM=1	25-13		
46	0	TBN	LIBNUM=1	14-26, 15-18, 15-35, 16-06, 16-08, 16-19, 16-34, 18-38, 19-25, 19-33, 20-08, 20-19, 20-35, 23-10, 24-33, 24-41, 24-43, 25-01, 25-25, 27-02, 27-09, 28-45, 29-17, 33-03, 35-35, 35-48, 36-02, 40-21, 40-45, 42-05, 42-45, 44-46, 48-18, 51-19, 52-17, 53-34, 53-37, 54-11, 54-33, 56-13, 56-18, 56-23, 57-23, 57-31, 63-36, 67-41		
53	0	TBS	LIBNUM=1	31-23, 31-25, 31-29, 34-21, 34-26, 35-19, 36-13, 37-07, 37-09, 44-26, 44-29, 45-04, 45-09, 45-12, 45-33, 45-43, 46-08, 46-29, 46-46, 46-48, 47-08, 47-10, 47-19, 47-25, 48-26, 50-31, 50-33, 50-35, 50-37, 50-42, 51-03, 51-05, 52-37, 52-42, 52-44, 52-46, 53-46, 54-48, 56-02, 56-04, 56-29, 57-10, 57-14, 58-07, 59-10, 59-30, 60-15, 61-16, 61-22, 61-31, 62-33, 67-15, 67-33		

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PATCH HISTORY

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COUNT	T	NAME	DEF/REF	REFERENCES	CIPL	W77D
10	0	TIO	LIBNUM=1	13-49, 14-24, 18-29, 22-09, 23-32, 29-09, 29-15, 43-22, 44-06, 66-47		
27	0	TZ	LIBNUM=1	15-06, 19-10, 22-47, 25-20, 26-01, 32-42, 35-13, 37-12, 51-09, 54-07, 54-29, 56-08, 58-04, 61-25, 61-35, 61-48, 62-08, 62-21, 62-44, 63-29, 63-39, 64-15, 64-39, 64-43, 67-04, 67-11, 67-38		
1	0	XI	LIBNUM=1	69-19		
1	0	XR	LIBNUM=1	25-28		
5	0	ZBN	LIBNUM=1	15-17, 19-24, 28-46, 35-39, 57-21		
17	0	ZBS	LIBNUM=1	31-36, 35-28, 37-18, 38-28, 45-37, 46-28, 47-14, 47-24, 48-30, 48-40, 50-48, 51-12, 56-35, 59-01, 59-06, 59-29, 67-32		
18	0	ZR	LIBNUM=1	14-09, 22-46, 24-13, 26-03, 37-19, 37-24, 40-47, 44-15, 45-26, 51-14, 55-43, 59-26, 63-33, 64-23, 65-08, 65-17, 65-33, 66-18		

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PATCH HISTORY

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COUNT FLAG

PAGE-LINE OF FLAG

CIPL

W77D

8 W

15-34, 15-38, 15-40, 15-44, 15-48, 16-23, 16-26, 16-38

8 FLAG(S) FOUND IN THIS ASSEMBLY

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